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Report on Central Ward Food Service Test at Brooke Army Hospital

By

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IN DECEMBER 1955, The Surgeon General, Department of the Army, authorized a central ward food service test to be conducted at Brooke Army Hospital. A similar test, "Air Flight Feeding," had been in progress at Valley Forge Army Hospital for approximately four years.

The project conducted at Valley Forge Army Hospital pointed out many advantages of centralizing ward food service activities into the main kitchen instead of serving all trays from widely dispersed ward kitchens. Since the Valley Forge Army Hospital is constructed on the horizontal plan, the test did not provide data as to the efficiency of operation or the problems incident to this type of food service in the vertical plan hospital, which is the type hospital currently approved for new hospital construction.

The primary objectives of the Brooke Army Hospital test were:

1. To test new food carriers in a multi-story hospital to determine if any traffic problems might arise.

2. To advise on practicability of using centralized tray service in new permanent hospitals being planned.

3. To study the staffing requirement for centralized ward food service.

4. To determine problems and changes in equipment requirements and plans for arrangement of the assembly area.

5. To determine whether or not ward kitchens could be eliminated or how much they could be reduced.

6. To study improvements in quality of food served to patients and to judge patient satisfaction.

7. To determine the reduction in food waste.

8. To determine type of dishes best suited to this type of service.

9. To determine possibility of improved dietetic service to the patient through more dietitian contact with patients and medical corps officers and more direct control of food served.

10. To change meal hours to time best suited for patients.

11. To determine whether a check menu or a selective menu is desirable.

12. To develop a procedure for obtaining accurate diet changes, for assembly of patients' menus and tray tags, so that patients' likes and dislikes are noted.

Currently, at Brooke Army Hospital, we are operating two types of ward food service. In the main hospital we have completely converted to centralized ward food service, and are serving approximately 200 trays on 11 carriers. In Annex IV we are serving approximately 200 trays from 6 ward kitchen-

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ens as decentralized service. By operating a Food Service Division with two types of service, it is possible to make some definite observations relative to the advantages and disadvantages of the two systems.

DECENTRALIZED SERVICE

The problems of decentralized tray service are well known. For years, the task of feeding bed patients in hospitals has presented the constant problem to hospital administrators of providing patients with attractive trays on which the proper food items are placed, with hot food hot, and cold food cold, and served at the time the patients want to eat. In the past, the most acceptable approach has been to decentralize the kitchen operation down to the ward unit and to serve trays from each ward kitchen, irrespective of how many or how few bed patients were in the ward. Consolidation of bed patients, or serving of several wards from one ward kitchen, has been a necessary modification as the patient load was reduced in a hospital and/or the number of personnel assigned have been reduced. Even though decentralization, in theory, may have provided a more personalized tray service to the patients in a particular ward, the following inadequacies have been recognized:

1. Dietetic control with decentralized tray service is difficult. There is little assurance that the foods prescribed for regular and modified diets are reaching the patients for whom they are intended or that patients' likes and dislikes are being noted when the tray is served. Too little supervision over too large an area makes it difficult to supervise the serving of trays from all the ward kitchens during the meal serving period. Employees of low wage scale are required to learn many diversified skills as pertain to the serving of 15 or more types of diets, with at least 10 to 15 chances for error on each tray, as well as other responsibilities, such as passing of nourishments, cleaning, etc. The high turnover rate in this grade of employee makes training and supervision of these employees a problem of major impor-

tance. Diversification of the ward kitchens, and the fact that an employee is often working alone in the ward kitchen, make dietetic control over tray service most difficult.

2. The large space requirement for ward kitchens is expensive.

3. Duplication of expensive equipment and supplies tend to increase maintenance costs as well as security control required over all ward kitchen areas. The distribution of paper, soap and miscellaneous supplies is a time-consuming job which is difficult to control and is very costly. Exclusive of installed drainboards, the equipment in one ward kitchen was valued at \$4,500. This included dishwashing machine, tables, carts, ladles, trays, silverware, mops, stoves, can openers, dishes, etc.

4. Noisy ward kitchen areas interfere with the patients' rest.

5. Food odors, heat and steam from the kitchen frequently bother patients.

6. Pilferage loss and excessive food waste result in higher food costs. Money which could have been spent for improving type and variety of food served to patients is lost as food waste. Small quantities of all types of food remaining on each cart after serving of the trays on the wards increases food waste. Plate waste is usually excessive, since controls over size of portion, and likes and dislikes of patients are extremely difficult to correct on decentralized tray service. Unauthorized personnel are more readily tempted to eat on the wards because of the presence of the food in the area, thereby decreasing income received for meals served. It is also difficult to control the type of nourishment being served to patients on diet, as well as prevent unauthorized personnel from the temptation of taking nourishment on the wards.

7. Deterioration in quality of food has been noted, due to the holding of food in the hot food carts for a period of time while trays are being assembled and served. Also, food is less attractive in appearance because of the increased handling of food in the loading of carts and the serving of trays.

CENTRALIZED TRAY SERVICE

Several general statements are needed to enable you to understand how the centralized tray service is operating at Brooke Army Hospital. Everyone agreed that we did not want to start a new system unless the quality of food served to patients was improved. Therefore, before centralized tray service was started, the holding quality of various types of prepared foods was tested on the carriers. Since there appeared to be more skepticism concerning the quality of breakfasts served from the new carriers, eggs and toast prepared by various methods were placed in the heated section of the carrier and tasted at 10 minute intervals by dietitians and mess stewards. Fried eggs (over light), soft cooked eggs, poached eggs, bacon, ham, and buttered toast, were highly acceptable products when retained up to 45 minutes (the maximum holding time). Scrambled eggs, with proper proportion of cream added, became a highly acceptable food. Hot cakes, and French toast likewise were highly acceptable when a new recipe was developed to obtain a light fluffy product for Centralized Tray Service. Dinner and supper meals served from the china plates and held in the heated section up to 45 minutes are acceptable products, while plastic dinnerware seemed to overheat and dry out food. However, the combination of heat and humidity in the heated section of the carrier appears to be the controlling factor in retention of high quality food, rather than the dish on which the food was served. A tablespoon or more of liquid served on a vegetable in a vegetable dish produces sufficient humidity to retain meat, potatoes, gravies, and vegetables in a highly acceptable manner. For this reason, the doors of the heated section of the carrier must fit firmly, in order to produce and retain a constant humidity in the carrier during the holding period after loading and prior to serving on the ward.

In the multistory building with two service elevators, no traffic problem arose. The carriers are quickly lifted to the proper floor

and pulled into the ward hallway to a position nearest the first patient to be served. On some wards, where traffic is heavy, the carrier remains in one position during serving of trays. On other wards, the carrier is moved close to the patient before the tray is served.

Since the carriers at Brooke Army Hospital do not have to go up or down steep ramps, the weight of the carrier and the spilling of food were not problems. Medical Department china dishes are used on the carriers. Two of the plates with hot food have to be tilted slightly so that four plates will fit each drawer, but there is no spillage when the carrier is in motion. Onandago Pottery Company, producers of Syracuse China, have new style dishes on the market called "Trend"—a square type set of dishes in various attractive patterns, which are designed specifically for hospital food service. This china service takes less space on the tray, the weight of the service is greatly reduced, and the tray served to patients is most attractive. A service of these dishes with tinted pink edges has been procured for centralized service in the Main Hospital building.

An assembly area for food was set up in the main kitchen. All activities which were carried out in the ward kitchens were moved to the main kitchen. Here, the personnel previously assigned to the various ward kitchens, work in the kitchen area under direct supervision. The assembly personnel perform various jobs for the assembly of cold foods—making salads, wrapping silverware, cleaning carriers, wrapping bread, dishing up desserts, etc. The present assembly area for 200 trays is located in a space approximately 20×40 feet. No new equipment has been purchased. Four stainless steel tables from the ward kitchens, three movable tray racks from the ward kitchens, one 65 cubic-foot refrigerator and a small wooden table shelf are so arranged that 200 trays are called, loaded and checked with cold food in approximately $1\frac{1}{2}$ hours. Each carrier holds 20 trays and it takes ad-

proximately 14 minutes to load one carrier in the cold assembly. A conveyor belt has been ordered, and the speed of the cold assembly with the conveyor belt will be compared to our present loading system when put into effect. At that time, it will be determined at what number of trays a conveyor belt will be essential to centralize tray service. Movable Lowerators have been ordered to store bread and butter dishes, soup bowls, cups, and saucers for the cold assembly area, to conserve space and to reduce excessive handling and moving of dishes from the dishwashing area to the cold assembly area.

The assembly area for the hot food is the responsibility of the diet cooks who cook the modified diet food, as well as dish up all plates of food from the bain marie, the grill, or the oven. It takes approximately six to eight minutes to load 20 plates on one carrier in the hot loading area. For this reason, hot loading starts considerably later than the cold loading, and takes about an hour. Since hot food tends to deteriorate more rapidly than cold food, it is desirable to delay the hot loading as long as possible and to load the carrier as quickly as possible.

Patients on regular diets are given a menu each day to check their preferences, size of portion, and type of beverage for the next three meals. The patient may choose small, medium or large servings, or delete an item not desired and ask for substitution. All patients on modified diets are contacted by dietitians daily to determine likes and dislikes which appear each meal on the menu for that particular patient. Patients on selective diets are given a selective menu from which to choose the type of food desired. If the menu is properly checked by the patient or the dietitian, the patient will receive on his tray the foods which he will eat and in the size portions desired.

The employee who served in the assembly area, takes the cart to the ward at the time desired by that particular ward. The service on the ward is quick, quiet and efficient. The hot plate with the patient's menu is placed

on the cold tray bearing the patient's tray tag. The beverage (either iced tea in one unheated well or hot coffee in a heated well) is poured according to menu; soup is dipped from another well; and the tray is ready for the patient. There is no noise, confusion or undesirable food odors. More coffee, iced tea, hot tea, milk, etc., are available on the cart if a patient desires a beverage served later or desires seconds. It takes approximately 12-14 minutes to serve one carrier on the ward (20 trays). When the patient is finished with his meal, the soiled tray is placed on the carrier and it is returned to the kitchen. The employee may leave the ward when the trays are served, return to the main kitchen, and take another carrier up to another ward to serve, according to the schedule.

Nourishment service is also centralized. Individual nourishments are poured into glasses having paper lid covers on which are indicated the name of the patient, type of nourishment and hour the nourishment is to be served. At 0930, 1430 and 1930 hours, one cart with nourishment goes to all wards to deliver nourishments. Any bulk nourishments required for a ward are labelled, capped, and placed in the nurses' refrigerators.

Soiled dishes are returned to the kitchen, removed from the carrier and washed in the central dishwashing room. This does not create any problem, as the dining hall dishes from the previous meal are usually completed by this time.

Clean glasses and water pitchers are placed in a cart (the cold food cart previously used in decentralized ward food service) located near the nurses' station. Soiled dishes are placed in the bottom shelves. Six times each day (at mealtimes, midmorning, midafternoon, and evening) a food service employee picks up soiled glasses and water pitchers and returns clean ones.

For many years the major complaint of ward food service was that the ward dietitian had to spend much of her time and attention to clerical, administrative and personnel problems, which took precedence over pro-

professional responsibilities and limited the time available for visiting patients. With the adoption of centralized tray service, the ward dietitian has plenty of time for visiting patients to determine personnel likes and dislikes and the acceptability of meals served, making visits to patients at mealtime when they receive the trays, discussing dietary problems with the doctors and nurses in order to improve the dietary treatment of patients, and giving diet instructions to patients.

Advantages of Centralized Tray Service

1. Improved patient satisfaction because of selection of food and size of portion, and daily contact by dietitians to determine patients' likes and dislikes.

2. An approximate 80% decrease in food waste has been noted, due mainly to reduction of quantity of modified diet foods prepared for the wards, as well as a minimum of plate waste because of selection of food and size of portion by patients on regular menu and consideration of likes and dislikes of patients on modified diets.

3. Reductions of the cost of equipment and dishes in the seven ward kitchens, and reduction of cost of maintenance of dishwashers, stoves, toasters, etc., which had averaged approximately \$50 to \$100 per week.

4. The amount of soap powder, paper supplies, cleaning supplies, mops, etc., consumed has been reduced 30% by consolidation of the cleaning activities in the main kitchen.

5. Centralized tray service has reduced the cost of nourishments approximately 75 to 80%.

6. All 7 ward kitchens were closed. Each ward kitchen was approximately 450 sq. ft. (total approximately 3100 sq. ft.). Estimating the cost of hospital space at \$25.00 a sq. ft., the space was valued at \$77,500. One ward kitchen was used for ward dietitian's office, and the other six were absorbed by the various ward activities. It is believed that in construction of new hospitals, ward kitchens

are not required. However, a small galley type wall inset with ice cube machine, water faucet, small refrigerator and shelving for water glasses and pitcher would be desirable near the nurses' station.

7. On centralized tray service, the meal hours can be adjusted to best suit the needs of the patient. In spite of Army customs and ward routines, the meals are being served later (except for obstetrical wards). The schedule is:

Breakfast—0700-0720
Dinner —1200-1220
Supper —1700-1720

An even later schedule might be desirable, if ward routines are adjusted, as the Food Service Division can arrange to serve meals as late as 0800, 1300, and 1800 hours, if this schedule is desired by the patients.

8. Definite data on staffing requirements have not been completed. At this time, a comparative study of productive manhours per tray served is being conducted for centralized and decentralized tray service, and the results will not be completed for several months. One thing is known—the ward kitchen personnel are now working in one area of the main kitchen under more direct supervision of dining hall dietitians and non-commissioned officers, thus a greater volume of high quality work is being produced by fewer people. In addition, the food served to patients is of better quality and the patient is assured of receiving the proper foods on his tray.

CONCLUSIONS

1. The implementation of a system of centralized tray service requires coordination of all professional and administrative services of the hospital.

2. Centralized tray service is detailed, but not difficult.

3. The success of implementing a system of centralized tray service depends upon several factors:

- a. A sincere belief in centralized tray service as a better form of ward food service.

- b. Accurate planning.
- c. Courage to put the plan into effect.
- d. Coordination with everyone who might be affected.

e. Flexibility in meeting obstacles with an open mind and a desire to speed into another solution if one plan fails. Action must be taken immediately if something goes wrong. The web of past policies, traditions and customs must be pushed aside, and new policies must be established which meet the needs of this new situation.

4. In all planning, the dietitian and all staff officers must realize that quality of food for patients will improve, likes and dislikes will be taken care of, and hot food will be served hot. It is important for you to understand this because centralized tray

service has many advantages that are evident as soon as the confusion of the change-over and the change from the old work patterns are accepted as routine. The dietitian charged with the responsibility of implementing this program with all its ramifications will have to recognize trouble spots as they occur and take decisive action immediately. Likewise, all hospital personnel concerned should recognize these trouble spots when they occur, and make every effort to assist in establishing centralizing tray service as an important stepping stone to better hospital administration.

5. There is no basis for the thought that all it takes to establish satisfactory centralized ward food service is obtaining the food carts. This step is only the beginning.



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The Nurse as a Clinical Specialist*

By

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NURSING originated, spent its formative years and is today being practiced in what you and I know as a clinical situation. This situation may be described as being concerned with a person who has a disease or condition for which he needs medical care. In the modern clinical setting, one finds many professional and non-professional people, technological and scientific tools, much general and special equipment, and frequently a particularly designed physical structure being useful in the medical care program.

The actual performance of nursing varies to some extent in every clinical setting and this poses a problem when one tries to describe the nurse as a clinical specialist. The components of a clinical setting are the patient, the personnel, and the environment. The person, who is commonly called the patient is the heart of this setting. He is both the stimulus and the receptor of its action. The personnel become effective only to the degree that they recognize the significance of the patient. The environment both in the physical and non-physical sense becomes meaningful as it serves the purpose of the patient. We will not be concerned with the environment in this discussion only to the extent that we recognize the important contribution made to it by the people who live and work in it.

According to common usage, the term clinical nurse specialist implies that the nurse has a readiness to perform a superior quality of nursing. The clinical nurse specialist has educational preparation and/or experience in nursing which have given her an opportunity to increase her knowledge of medical and nursing science and to perfect

her art and skill in the practice of nursing. The clinical specialties in nursing have developed largely in accordance with specialization in the field of medicine. Thus we have clinical nurse specialists in child and maternal health, cancer, tuberculosis, cardio-vascular disease, medical, surgical, neurological, psychiatric nursing and many other areas. Nursing Education has organized nursing programs in graduate education to prepare clinical nurse specialists in some of these clinical areas. In other areas no educational program exists. The nursing profession as a whole differs from medicine in regard to specialization as it has not established standards for the practice of nursing in the various clinical fields. The medical profession has established qualifications, standards for practice and specialty board examinations to determine competence in many of the clinical areas of medicine. This may be a development in clinical specialization to which the nursing profession should give some attention.

As the science of nursing develops we recognize its significance and the various levels of performance in the nursing care of patients. Nursing in a general way is dependent upon physical, biological, and social science. It is also in a particular way dependent upon a knowledge of medicine, even of the special fields of medicine. For nurses to be equally prepared in all special areas of knowledge involved is both at the same time intellectually difficult and economically unsound. Therefore it seems to me to be potentially useful to examine preparation, qualifications and competencies desired in specialization in clinical nursing and to establish standards for practice of same. If we examine the practice of nursing in the various clinical areas we can identify the application of principles and concepts of the

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general and particular areas of science. Some sciences are more closely related to the practice of nursing in one clinical area than they are in another. For example, if we examine nursing activities or tasks in the care of patients with a cardiac illness, hemiplegia, psychiatric conditions or a child with cerebral palsy, we recognize the need for an applied knowledge of anatomy, physiology, pathology, psychology, epidemiology and other related sciences. The scientific ideas to which I refer are also used by all members of the health team and the scientific knowledge which forms their basis makes it possible for the members of the health team to plan the patient's care, work together in his rehabilitation and aid families and the community in developing an understanding and assuming their responsibility in promotional, preventive and rehabilitation health programs.

Nursing in each of the highly specialized fields of medicine makes use of special skills, some of which are technical in nature but many of which are intellectual and judgmental. These skills are dependent upon human attitudes, understandings, and the personal characteristics of the nurse. The direct nursing care of patients in which the nurse gives care to the patients requires the artistic, often creative use of skills so dependent upon scientific knowledge that when separated from it the actual nursing care becomes devoid of meaning and non-therapeutic. The indirect nursing care of patients in which the nurse performs tasks away from the patients but related to his needs and welfare likewise requires planning and implementation based on scientific knowledge. We have only to think of the recent treatment advances in the development of cardiology, surgery, psychiatry and tuberculosis to realize that the knowledge necessary to do therapeutic nursing is not static. Rather it requires new and dynamic concepts and is, therefore, based upon a continuous learning process which is both stimulating and challenging to the nurse who is a clinical specialist.

One may also think of the nurse as a clinical specialist, as being able to meet the nursing needs of patients regardless of their condition or disease entirely. Such a nurse has a high degree of actual or practical skill in nursing. This is identified in her work as she effectively accomplishes planning and administering nursing care, observation of patients, assisting physicians, creating and maintaining therapeutic environments, health teaching, socializing and other functions necessary in the rehabilitation of patients.

All clinical nursing is patient or family centered. To meet the nursing needs of patients is its goal. Some of the differences inherent in clinical nursing functions are due to the individual patients whose needs require different satisfactions. Patients' needs differ in many ways. His personality, self concept, future goal, family and cultural background, life's experience, occupational preparation and achievement always influence his needs. Likewise, his state of health, disease entity if sick, treatment reactions, and expectation of future dependencies or independency are determinants of his needs. They very often are grouped as physical, social, psychological, mental, spiritual and religious needs. However, it is well to think through these general terms in order to clarify their significance in the actual practice of nursing. It is also well to remember *no need* is found separately or alone but rather each depends and is entwined in another.

Each nurse is also an individual person and, therefore, brings to the practice of nursing characteristics unlike any other nurse. These characteristics influence the quality and effectiveness of the work done in nursing patients. They are so much a part of the person who is the nurse that it is difficult to see them but they are reflected in the quality of nursing which she gives to patients.

The nurse-patient relationship is the enveloping structure in which all nursing activity occurs. The interaction which occurs in this relationship gives the patient the

support, the nursing necessary for his comfort and promotion of sustained effort to meet with courage and realism the daily happenings in his period of stress. He develops from this experience strengths helpful in his future life.

Nursing has a goal of rehabilitation and recovery which it serves well. On the other hand realistic thinking makes us realize that recovery is not always possible. The nurse-patient relationship and the activities which it supports also brings comfort to the patient for whom recovery is impossible. In a measure this relationship stands its greatest test in the care of the dying patient whether he is young or old.

The nurse-patient relationship is predicated upon knowledge of oneself and the patient. It is activated through action and interaction of the two people involved, the nurse and the patient. This is brought about by physical and personal contact in a therapeutic social climate as the nurse ministers to the patient. She listens to him, communicates her respect, trust and love for him. She administers his medicine, diagnostic tests and treatments, observes his responses to treatment and other behavior, teaches and supports him in self care methods, guides and aids him in daily living activities and their modifications necessary for his rehabilitation. She assists him in planning for his self-development and healthy adjustment in his future life experiences. The communication going on between the nurse and the patient is both the cause and the means of their relationship. Communication is the means by which the nurse functions. In this way she knows the feelings of the patient and he realizes her feelings toward him. There is a supporting bond established which promotes his progress toward recovery or sustains and maintains his comfort in the event of a terminal illness.

The nurse has either the direction or the support of medical authority as she cares for patients. This gives her the responsibility of planning with the physician for the care of the patient and of reporting to him

the patient's progress as she sees it. The nursing care that evolves in the nurse-patient relationship is both an integral part of this relationship and an extension of the overall comprehensive care of patients. Communications between nursing and allied professional workers is a pertinent means of insuring the effectiveness of the comprehensive care program.

Communications between allied workers are based upon knowledge and respect for each other's discipline as well as of each other. The morale, mutual understanding and co-operation of these allied workers in a comprehensive treatment program is reflected in the care of patients and in their rehabilitation. The nurse has a significant function in bringing about an effective communicating system to integrate and co-ordinate the excellent contributions of the many allied specialists that meets the needs of patients.

In summary my concept of the nurse as a clinical specialist may be briefly stated as follows:

Such a nurse will be specially qualified by educational preparation and/or experience to (1) competently develop the nurse-patient relationship, (2) give a fine quality of nursing care to meet the nursing needs of all patients, (3) perform expert nursing in a particular clinical setting in which medical specialization makes special demands on her knowledge and skill in giving care to individual patients who have particular disease conditions and (4) through her communications with patients and with allied professional and other workers assists in an integration, co-ordination and extension of a comprehensive care which either influences the recovery of patients or sustains and comforts them in a terminal illness.

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**Everybody benefits
when everybody gives,**



The Nurse as an Administrator*

By

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THE basic concepts of administration as applied to nursing have undergone a number of significant changes in the past ten years. There was a time when the director of nurses thought she should be able to do nursing care in all departments better than anyone else. As important as it is for the nurse administrator to be a competent professional nurse, she should also have preparation and experience in the principles of administration.

Nursing educators recognized that the nurse administrator significantly affects the education of nurses, the teaching of nursing, and every day nursing practices, and that competent nurses need additional preparation in administrative principles that have specific application to nursing service. Likewise, the nursing administrator has realized that her position, in addition to requiring technical competency, demands the ability to think clearly and to understand and lead people. She found that she was administering in a volatile and rapidly changing socio-economical political environment where open-mindedness and flexibility in thinking were essential characteristics of the leader.¹

The nurse administrator must have demonstrated ability as a leader in her knowledge of nursing practice and be able to assure that qualified individuals are available, able, and willing at the appropriate time and have the necessary equipment to do the work at hand. These administrative functions are inherent in the duties and responsibilities of the head nurse, supervisor and chief of nursing service in giving patient care. Competence in the knowledge and skills of nursing practice, administration and teaching responsibilities vary in scope from the head nurse to the

chief nurse, but the capacity and ability to perform these functions are the same. I consider the head nurse as one of the key nurse administrators in the hospital because it is upon her performance as a professional nurse that standards of nursing care depend. She is near the public more hours of the day and night than the supervisor and the chief, nursing service. Her patients, their families and friends, and the nonprofessional nursing service personnel judge the nursing service and the profession of nursing by her nursing practice, leadership and teaching ability. She must be articulate and able to communicate with patients from many socio-economic backgrounds and interpret, as needed, the meaning of their illness and necessary treatment. This requires that the head nurse have an understanding of people and their needs in relation to their particular religion, mores and values.

The focus of administrative function is on people. The head nurse must exercise administrative skills in obtaining effective coordination and cooperation from members of other departments such as laundry, laboratory, X-ray and pharmacy. She coordinates and plans with these hospital services in order to provide the effective nursing unit essential to carrying out patient treatment and care as directed by the doctor.

The chief nurse develops from such a head nurse by growing in competence as a professional nurse, as a leader and as an administrator through the supervisory levels to her chief nurse position. The chief nurse will find that administrative skill is a multiplier. That is, one nurse using administrative skills to guide and teach her helpers and coworkers, can be literally in several places at once, seeing that patients receive from each person the quality and quantity of nursing care which their illness requires. She develops standards for nursing practice

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and personnel policies for all nursing service personnel. She develops the standards for selection and utilization of nursing service personnel. Once selected and assigned to duty she guides and motivates them to do their jobs to the best of their ability; evaluating both their performance and need for additional training and ironing out the inevitable misunderstanding and inconsistencies that develop.²

The chief nurse must have additional preparation to assist her in developing these administrative skills that are essential in maintaining high standards of nursing practice. When these administrative skills are used in her contacts with nonprofessional as well as professional personnel, the chief nurse engenders in each individual a desire to do her job well and to work effectively for the best interest of all patients. It follows then that the chief nurse's position demands abilities which are recognized as being essential to a leadership role. This indicates we must understand what is meant by leadership ability.

Always, there have been too few great leaders of men. Leadership has been defined by many people. I like to think of leadership ability as the ability to develop greatness in others. Shakespeare had a great deal to say about greatness and, if we apply this to leadership, we have the frequently quoted paraphrase that "some people are born leaders, some achieve leadership, and some have leadership thrust upon them."³ Whether or not the chief nurse has arrived at her present position by one or all of these reasons depends in a large measure on her preparation and experience in patient care. She is developed directly or indirectly by others to achieve those qualities that are necessary to teach, guide and direct the nursing service personnel. She must have a sound Christian philosophy and a sincere interest in her patients and her personnel. She must not only be proficient in professional nursing but skilled in human relationships and communication. Progress in caring for the sick and promoting health throughout the history of man has been brought about by both leaders

and followers. The ability to write and speak well is important for every nurse. Many nursing causes have been delayed because the person who presented the cause failed to convey her ideas effectively, or to relate them to prevailing problems.

The chief nurse must inspire ambition in members of her staff and this is almost impossible without communication skill. Also she has teaching responsibilities and must be articulate to accomplish this. She conducts conferences and meetings for the purpose of informing or teaching members of the nursing staff concerning changes in hospital policies and current trends in medical and nursing practice. She must, in turn, recognize the leadership potentials in members of the nursing staff and teach them how to develop into qualified and effective nurse administrators.

We might then summarize the functions of the nurse administrator as follows:

1. Defines the objectives and goals of the nursing service.
2. Plans for and directs patient care.
3. With members of her staff plans and establishes Nursing Service policies and standards of nursing practice.
4. Practices principles of sound organization and good interpersonal relationships.
5. Selects, assigns and develops personnel toward professional growth and a better understanding of their duties and responsibilities in patient care and professional nurse leadership.
6. Coordinates nursing service and nursing activities to accomplish the aims and objectives of her profession and the hospital.
7. Continually evaluates patient care and initiates improvements or corrective action as indicated.
8. Maintains effective public relations with allied professional groups and the social and religious organizations of the community.

When the chief nurse is able to fulfill these functions she will be a leader who is able to develop these same capabilities in the

members of her staff and thus exemplify my definition of a true leader, "the ability to develop greatness in others."

Office of the Surgeon General
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The Changing Role of the Nurse as a Teacher*

By

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THE professional nurse of today spends much of her time in teaching regardless of the field of nursing in which she practices. She may teach simple hygienic measures in the care of the newborn to a new mother; she may help a family adjust to the patient with a long-term illness; she may assist a patient to plan a normal life within the limitations set by his disease. As a team leader, she may teach a junior nurse or a student of nursing how to gain rapport with her patient or teach her nursing team how to do new procedures. She may be teaching home nursing to community groups or conducting a health program in some industrial plant. She may teach elements of supervision or administration as part of an in-service program; she may teach in a basic school of nursing or be on the faculty of a college or university . . . whatever field it is, some or a major part of her day will be taken up in teaching either patients, the public, or nursing personnel.

I should like to discuss the changes in the role of the nurse as a teacher that have occurred in the past twenty-five years in relation to her patient, in relation to the public, and in relation to nurses.

THE NURSE AS A TEACHER IN RELATION TO HER PATIENTS

Twenty-five years ago when a patient was admitted to the hospital, he met his nurse. She was the one who gave him his bath, medications and treatments. During these procedures he became acquainted with her and she with him. In the course of conversation, the nurse would learn much of the

patient's personality, his reactions, his troubles; she was his friend who helped him adjust to the many new, different and sometimes frightening facets of hospital life. She took care of everything for him; all he had to do was to lie in bed and be receptive to what was brought to him or done for him. She mothered him; he depended on her. While it comforted him to know that someone was interested in him, this dependence often prolonged his convalescence.

Twenty-five years ago the patient with a medical diagnosis required a great deal of physical care because so much of what the nurse and medical science could do for him was supportive. . . . His own body had to overcome the disease. This physical care was so important that the quality of it may have meant the difference between life and death. This was particularly true of patients with pneumonia or typhoid fever. In patients with surgical conditions, it was routine for them to remain flat in bed for four to five days, to be fed clear liquids for at least three days, to turn only with assistance, and to be allowed out of bed after ten to fourteen days.

We convinced the patient he was ill, so he might as well enjoy it! If during his time in the hospital we were able to teach him correct measures of personal hygiene, we did. . . . Our failure as teachers was in *not* promoting faster recovery by teaching him to be independent. This is no condemnation of our care for the modality of treatment at that time was bed rest and pampering the order of the day. Our interpretation of our teaching responsibilities was within the narrow scope of personal hygiene. We had the idea of what to teach but had been given no instruction in how to teach nor clues to the laws of learning which would make the teaching effective. Too, the psychological and sociological aspects of illness were just beginning to be recognized.

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How vastly different the nurse and the patient in the hospital today! When the patient enters the hospital he may meet as many as fifteen people who will have something to do with his presence there. He may meet the professional nurse, the practical nurse, the ward aid, the ward maid, the janitor, the head nurse, the supervisor, the grey lady, the librarian, the dietitian, the physiotherapist, the occupational therapist, the social worker, the laboratory technician, the X-ray technician, the intern, the resident, and his own physician. And he may meet all of these people within the first few hours in the hospital!

The modality of treatment has changed, now the patient is encouraged to do as much for himself as he possibly can, the medical team is there to assist him. "Do it yourself" is the theme for rebuilding bodies as well as homes, boats, automobiles, and so forth. Just think of the patient with an appendectomy today; ambulating in 8-10 hours after surgery and home in 5-7 days.

The patient must understand and participate in his program of care to obtain the most complete recovery in the shortest possible time. Since the nurse is the only member of the medical team in continuous touch with the patient she plays an important role interpreting and selling the program to the patient. She has to convince (teach) him that in taking his own bath, for example, he is maintaining his strength and is avoiding complications. At the time she should be able to show him that it is solely in his interest and not her desire to avoid "bedside nursing."

The nurse of today is the leader and member of the nursing team. She is no longer the "Lone Ranger." Through the team approach she is able to provide more and better care to more patients than she could possibly accomplish alone. Her scope is broader. She is expected to be able to make a nursing diagnosis of her patient's needs both overt and covert; to plan with nursing personnel to meet those needs; to coordinate the therapeutic program prescribed by the

physician with other personnel; to recognize teaching opportunities; to recognize when the patient is ready to accept such teaching and to be able to give that teaching in terms and in amount the patient is able to understand and absorb. In addition, the professional nurse is expected to assist in teaching auxiliary nursing personnel and to give them her guidance, confidence and support.

In these days of self-care, the nurse may show her patient methods which will make it easier for him; she may take time while giving medications to listen to him talk or talk with him. She may, through on-the-job training of her nursing team and through multi-discipline conferences provide him with more intelligent care. In regard to patients with long-term illness or the geriatric patient—the nurse not only encourages self-care as much as possible but she also helps the family to provide home care for the patient through helping them understand the limitations of the patient, through teaching them any procedures necessary, through showing them how to improvise equipment and through acquainting them with the community resources available to assist them.

One of the areas in which we still have a great task of teaching to do is in convincing the graduate nurse that her changing role in relation to the patient is nursing; in convincing her that counseling the patient, preparing him for home care, giving him support when he needs it, being a good listener, helping him understand his fears, or recognizing when a member of an allied profession might help him more effectively, that working with and teaching her nursing team, are as much a part of nursing as giving the patient his bath. It is in this group action, this "working togetherness" of the patient, the family and the medical team, that the nurse will find job satisfaction.

THE NURSE AS A TEACHER IN RELATION TO THE PUBLIC

Twenty-five years ago the public thought of the nurse as one who cared for the sick, the dying and the injured. She was in a

world apart; a world they would just as soon not know about for when they did learn they were no longer the public but a patient under her care. The public was aware of only one nurse who taught preventive health measures, and she was the Public Health Nurse.

In the intervening years the public has learned much. Advertising has played a major role in helping the public to learn sound health practices through the psychological and sociological approach. For example: "B.O.," "Your best friend won't tell you," "I use Dial, don't you wish other people did?" The use of the miracle drugs, the antibiotics, advances in medical and related sciences have been well publicized during the past twenty-five years. (Sometimes too well and prematurely.) The public has attended first aid courses and drills, has some knowledge of or has read about the effects of radiation and mass casualties due to disaster or atomic attack; has contributed money or actively participated in raising funds to fight a particular disease. Each one of the funds, such as the National Tuberculosis Association and the National Foundation for Infantile Paralysis has conducted and continues to conduct public education campaigns as to the cause, treatment and prevention of disease.

Today the public expects the nurse to know at least as much as he does about these things and expects her to be able to add to his knowledge. The nurse is expected to be able to participate and give direction in planning for civil defense and community welfare. She may be called upon to conduct classes for community groups. The nurse may no longer expect to remain in her world for she is now a citizen of the community with a vital interest in promoting and conserving the life and health of that community.

THE NURSE AS A TEACHER IN RELATION TO NURSES

Twenty-five years ago there was one type of trained nurse. She was a person who had

been graduated from a state accredited school of nursing, had taken and passed state board examinations and carried the title R.N.

The nurse whose primary function was teaching at that time was almost exclusively the nursing arts instructor. The instructor taught and drilled her students in the procedures of basic nursing care in the classroom. The students were then assigned to the wards and were supervised by the head nurse. Often as not, the procedures taught in the classroom were not the same as the ones being practiced on the wards. Since the accent was on doing the procedures the students were confused and were more concerned with doing the procedure than with knowing their patients. This pattern of procedure-centered care was emphasized further by the manner of assignment in clinical practice; how often the student was given a list of the baths, enemas, catheterizations and other procedures she was to complete during the morning hours! After the first six months in the school, the nursing arts instructor had little or no connection with her students, besides she had a new group to teach and drill.

Gradually the teachers obtained additional preparation and realized their instruction must include the why, the who, the where, the when, as well as the how and the what of nursing. Greater coordination between the classroom and clinical practice was necessary. The clinical instructor was introduced. Her job was to be liaison between the classroom and the ward; to provide more individual care for the patients through making her ward classes patient-centered; to help the student recognize how the psychological and sociological aspects of the patient's illness affected her plan of care for her patient.

By the end of the thirties clinical instructors were being assigned to each of the clinical services and the nursing arts instructor became the teacher of the fundamentals of nursing. A greater portion of the teaching of nursing arts was being done in the ward

or patient situation and the teaching was patient-centered. Students' case studies became patient care studies and greater emphasis was placed on the student's interpretation of the patient's reactions and needs rather than on a recital of the material found in the patient's chart. By this time the faculty of the school and the supervisors and head nurses in the clinical practice areas were working together on ward teaching programs and on procedure manuals. Definite progress was being made also in correlating theory and practice.

No one knows where nursing would be today if World War II had not occurred but it appears to have accelerated the changes in nursing just as it did in all phases of life. From an over supply of man power in the thirties, the nation was faced with shortages in all occupations. The demand for nursing service far exceeded the supply. Some of the reasons for this shortage were that many more people were in hospitals than ever before, nursing had assumed many functions that were formerly the responsibility of the medical profession and the members of the nursing profession were entering many new fields.

Analyses of functions and activities performed by nurses revealed that there were non-nursing duties which could be allocated to personnel other than nurses and that some nursing functions could be performed by trained nurses' aides, hospital attendants, and practical nurses. With the several categories of personnel involved in nursing service the burden for assuring safe nursing care fell to the professional nurse. In-service

education was a necessity, not a luxury. Short intensive courses, systematic on-the-job training programs and close supervision were necessary to protect the patient. In addition to principles and methods of teaching and the laws of learning, the professional nurse now needed to know communication skills, interpersonal relations, group dynamics, problem solving techniques, and qualities of leadership.

The teachers of nursing through analysis, evaluation, experiment and research are attempting to develop a curriculum which will prepare the student for these responsibilities. Principles and methods of teaching, interpersonal relations, and psychology are taught early in the course and are interwoven with all other subjects. The teachers of nursing are using many methods of teaching such as seminar, symposia, panel discussion, individual and group projects, and role playing as well as the time honored lecture and demonstration. Students of nursing are being held responsible for more learning on their own, the teacher serving as a leader directs them into the correct channels of study. We do need to include more frequent opportunities for practice teaching in the basic curriculum. All the class subjects in the world will not help the student recognize teaching opportunities unless she is able to gain experience in teaching and unless she practices in an aura of patient care which acts out as well as thinks that teaching is an integral part of nursing.

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The Nurse and Research*

By

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THE nurse who functions in a research environment is not only practicing in relation to findings which already have been achieved but also as a member of a team which seeks new information. She plays a role in the research process itself and her procedures, observations and records are often crucial to the findings. Every new concept of disease and its medical management which is worked up in a laboratory must eventually be evaluated in human beings and in this connection the nurse shares with the research physician direct responsibility for the patient's care and welfare. In order to function in the most satisfying way to the patient, the physician and herself, she must have acquired an attitude toward research which will make her liaison between patient and doctor invaluable.

It is not easy for a nurse to acquire this attitude. The very nature of nursing has tended to minimize the curiosity inherent in research and placed emphasis on the procedural aspects. By contrast, the nurse who assists in clinical research must be constantly alert to the slightest change in patients' conditions or reactions and question continuously the whys and the wherefores. She must develop the habit of analytical appraisal of each new situation in order to evaluate and interpret that which may not be immediately obvious. She must also be able to change her preconceived opinions and operate on facts as they are presented.

A patient who agrees to participate in a research study is likely to develop anxieties about the study and his condition where so much attention is centered on him. The nurse

must be able to recognize this and meet his need for emotional understanding and support, thus providing an environment which will lead to his cooperation and understanding. This in itself means that the nurse must have a good understanding of the research project and the importance of the study to the world at large. Nursing in the research environment does not vary greatly from that of the general hospital—perhaps we can say that the difference is in degree rather than in kind. Obviously, precision is of the utmost importance in every aspect of patient contact. If orders cannot be accomplished accurately and with time for observation and recording, they lose their effectiveness and may even be a hindrance to the project. If the patient is bored or hostile, the study will be influenced by these factors. A nurse who has a good understanding of why studies are needed and can see beyond the immediate situation into a widened health horizon for the citizens of the world, has much to contribute in the research field.

Extremes can be detrimental. It is possible for the nurse who is engrossed with the aims and activities of research to lose sight of the patient as an individual with varying emotions and sensitivities. Should this occur, one of the attributes which make nurses important to the study is lost. On the other hand it is possible for the nurse to be so subjective in her reaction to the patient and the study that she cannot see the value of some of the ordered routines and procedures and does not give wholehearted support to the project. Either extreme can be bad. Sympathy and understanding are vital parts of nursing and must never be minimized or lost but these qualities must be in correct proportion to other qualities if the nurse is to be effective in any nursing situation. To be

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objective is not easy, but it is the first must. For this reason we place great stress on attitude when we speak of research. With an appreciation of the need for the appropriate attitude and a conscious effort to achieve the balance that is inherent in that attitude the nurse in research has made the first step toward effective team membership.

In clinical research primary consideration is given to accuracy. The research physician depends on all members of his team to be accurate in their work but since the nurse is with the patient more than any other member, much of the responsibility for precision and the elimination of error falls on her shoulders. She not only must check and recheck her own observations and procedures but she must be alert to any possible error on the part of other participants in the project. Some of the factors involved are those of time, judgment, measurement and observation. A recognition of the need for constant attention to detail and a performance in line with that recognition can be extremely trying and requires a well balanced individual.

In general, the nurse who participates in clinical research is in a position to compare the before and after aspects of a study, evaluate results and from her observations provide material help in working out guide lines for future studies. She is in a strategic position to interpret the study to the patient and work with him to reduce to a minimum the variables which complicate any project.

Specifically, she must be aware of the aims and protocol of each study in which she participates and be prepared to carry out accurately those duties assigned to her. For example, a study of cerebral seizures is currently in progress. In this particular study a nurse is constantly with the patient for the purpose of observing the symptoms of seizure onset, describing the details of the seizure and recording all data of any relevance. Here, the nurse must be alert to the details of seizure onset so that she can dictate her observations during the seizure and, at the same time, give or arrange for any

necessary nursing assistance to the patient. Failure to record an accurate running account of the seizure nullifies a program of continuous observation, interpretation and treatment. It is difficult to comprehend the tensions which may occur in this type of assignment. For concentrated periods one nurse must be alert to even a minimal change in patient behavior and be ready to describe in detail a series of symptoms which are rapidly changing. Such observation goes on 24 hours a day and for as many days as needed to provide the research physician with the data he needs for the study in progress. Lack of attention for even a short period may seriously interfere with the total record. In this type of assistance physical care of the patient is not taxing. Emphasis is upon observation and recording. Another area of research that has world-wide interest and in which the nurse is a pivotal figure is that of Cancer. Nursing in this area requires a high degree of skill in the physical and emotional management of the patient. One of the most important tasks is to keep the patient comfortable; this involves considerable ability in providing emotional support as well as the knowledge of how to move patients with a minimum of discomfort and how to position to obtain maximum ease. When new drugs are used the nurse must be alert to every change in patient reaction in order to provide the physician with an accurate report so that he in turn can interpret correctly the value of the chemical agent and draw conclusions in relation to future use.

Since patient management is a decided problem in the Cancer research area it is usual procedure at the Clinical Center for the nursing staff to plan with the clinical investigators well in advance of a new project in order that there may be a pool of ideas and a uniform and well understood approach achieved.

Without direct instruction, nurses may be instrumental in providing valuable knowledge to the investigator. An interesting observation was made in our studies of hypertension. It was noticed by the nurse that

blood pressure readings were influenced even by the patient's reaction to the personalities of the different nurses making the recordings. Out of these observations the nursing team worked out a pattern of operation to control the variations as much as possible. Where variations could not be prevented, evaluations were made and accurate recordings of information to the investigators were accomplished. This was only a small part in a total project but it had great influence on final results.

The ability to observe and to write an accurate description is one of the most important aids to clinical research. Seeing patients on a day-to-day basis, nurses can note differences and similarities in behavior or physical reaction which may lead to definite conclusions of value to the study. Further, these observations may provide the clue for additional investigation and it is important that research nurses recognize such responsibility in their daily activity.

Few people today are unaware of the drug studies which have been done and are being done in connection with mental illness. In this area alone can be demonstrated the value of observation and analysis while in constant contact with the patient. In the research situation the nurse does not play the role of custodian but rather that of a team member whose obligation is to evaluate and note information in the most helpful and accurate way possible. The quick recognition of mood change, an understanding of change in behavior pattern, however slight, and the ability to determine the degree of change are all part of the research nurse's routine when working in the field of mental health. For nurses who are curious as to motivation and behavior, the field of mental health provides many opportunities for interesting investigation and for satisfaction in personal accomplishment.

As more medical knowledge is accumulated there is an increased influence on the nursing profession to initiate changes in routines and techniques. Undoubtedly there are many nursing techniques of the same value

today as when originated many years ago but there are also many others which are being modified constantly to meet the needs of modern medicine. In some cases there have been improvements in medicine which have reduced the need for nursing care and in others changes in concept have made it possible to simplify the required nursing care. As new developments occur the nursing profession must be prepared to cope with changes and for this reason the need for research within the nursing profession itself becomes important. To cite one example, the increased number of cases of chronic disease alone poses many questions of long term nursing which are still to be answered.

If changes in nursing techniques are to be made they must be made intelligently and with sound scientific principles as the base on which they are built. Not infrequently modifications are made with little thought to principles involved. In some cases the changes are satisfactory in all respects purely through coincidence; in others the problems created are not conducive to good nursing practice and further change is indicated. All of which suggests the need for continuous review by nurses who are aware of changing needs and competent to make suggestions for improved patient care. The changes which are suggested should be tested in the practical situation and by nurses trained in the way of research methods and techniques. Once definite conclusions have been reached there is need for a satisfactory means of interpretation to all nurses in order to provide the greatest value to all patients. At this point a good system of communication is important.

This, in itself, requires concentrated study in order that the nursing profession as a whole can derive the benefit.

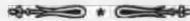
In the past some nurses have made suggestions for improvements in equipment or have devised modifications which increase the use of outmoded machines. Today more nurses are alert to the need for nurse-designed equipment and give considerable thought and productive time to devising ar-

ticles for improved patient care. There is need for increased study of time saving devices with the aim of maximum utilization of personnel. The shortage of nurse power will probably be with us for some time to come and there is little likelihood that talking about the shortage is going to improve the situation; there is the alternative of making do with what we have. This opens up the many questions of motivation, productivity, interest, satisfaction, etc. which industry has studied with gratifying results. In all probability the findings of industry apply to nurses and nursing but can we say definitely that this is so? If not, what can we do to determine the facts which do apply and those which do not. This, again, is an area for comprehensive investigation. The fringes have been touched but there is need for deeper penetration.

Then, too, there is that vast unknown—patient needs—the nebulous question of what the patient wants as opposed to what we think is good for him. What the doctor wants, what the nurse wants, what the patient himself wants, all of which receives fleeting recognition from time to time but which deserves very earnest consideration. In reality, what do we know about the actual needs of patients? We know what we think the patient needs, therefore we frequently rationalize that what he wants for himself is harmful. But on what authority can we decide? We don't really know and

to date not much effort has been expended to find out. One hesitates to discuss the problem because it has so many facets, many of which are emotional. But because the problem is difficult is not a logical reason for it to be ignored. Repeatedly we hear of the nurse shortage but it is just conceivable that were we to find at least some of the answers to the question of patient needs we might find some of the answers to the nurse shortage.

Perhaps the most important aspect of this total subject is the need to recognize that there is much within our profession that we don't know and cannot effectively learn until we investigate with an open-mindedness that will permit us to discard that which is no longer useful and accept for use that which is of proven benefit. It is possible for research to complicate the life of the nurse but it also offers her many unusual opportunities of service. The research process itself and the demands it makes is not attractive to all nurses or to all physicians. It is most attractive and gratifying to those who have great curiosity and the drive to search for answers. It is important for us in nursing that we encourage nurses with these attributes to go into research. Our profession will not really come of age until we have added to the sum total of scientific knowledge. We must take this into account more and more in a world in which research has become so increasingly important.



Changing Concepts in Military Medicine Concerning Psychiatric Casualties

By

MIRIAM W. HIESTER*

THEORETICALLY, the stage should have been set for the early care of psychiatric casualties in World War II. A plan of attack on the neuropsychiatric problems of World War I had been formulated in 1917. It was well conceived, reasonably comprehensive, and in principle it differed very little from present day practice. Before the United States entered World War I, commissions were appointed to study the neuropsychiatric experiences of our Allies and to make recommendations for treatment of our own "shell shock" victims. In March, 1917, The Surgeon General of the Army called a conference to analyze the data and to formulate a plan. Everyone recognized at once that the number of psychiatric disabilities could be reduced by screening at the induction center. Here was a principle, they realized, that if neglected would exact payment

... from many postwar generations not only in terms of huge economic burdens, but even more distressingly in terms of disrupted morale and human unhappiness, personal and social woe.¹

Colonel Thomas W. Salmon, chief of one of the commissions, submitted a report "which remains a classic in the annals of military psychology."¹ He pointed out the magnitude of the problem: a neuropsychiatric rate of 4 per 1000 in the British Expeditionary Force; one-fifth of the 200,000 British soldiers on the pension list, suffering from war neurosis. He also recognized the following principles in the treatment of psychiatric casualties:

... the establishment of overseas neuropsychiatric base hospitals; the operation of the psychiatric segment of the sorting center or triage; provision for small (30 bed) units in the advance section of

the line of communications for observation and treatment of war neuroses; a psychiatric service of evacuation hospitals, the transportation of soldiers, and their care in the United States.¹

This reads surprisingly like directives and plans put into effect more than twenty-five years later in the *last phase* of another world war and carried out with marked success in the Korean Conflict. If these principles, used ultimately with effectiveness, were known in 1917, why was it that psychiatric treatment lagged behind other services in World War I and even in the early years of World War II?

Following this important conference, The Surgeon General created in his office a Division of Neurology and Psychology whose members formulated a comprehensive plan to be used if war was declared. Provisions were made for the following:

... extensive preparation for the examination of recruits in the mobilization camps, looking to the detection of those neuropathically or psychopathically unfit for military service; the setting up of adequate facilities for the observation and care of nervously and mentally sick soldiers pending discharge; plans for places and methods of treatment for psychiatric disabilities in the A. E. F.; plans for treatment and disposition of soldiers invalidated home from overseas.¹

But when war was declared in 1917, there was a shortage of personnel capable of putting into effect these provisions; therefore very little was actually accomplished except in the matter of screening inductees. By the time the other parts of the set-up were ready to function, the war was over. Even when the armistice was signed, there were only 693 neuropsychiatric officers in the Army. This war was the first in which functional nervous diseases (then called "shell shock") constituted a major military problem. In terms of incidence among the neuropsychiatric cases, the psychoneuroses constituted the

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most significant problem in World War I, more than 43,000 cases having been identified. The majority of these were evacuated to base hospitals and many were ultimately discharged. Proper use was not always made of the psychiatrists that were assigned to forward areas. In a letter to all division surgeons, on September 8, 1918, Major General M. W. Ireland wrote:

During the recent activities one division surgeon assigned the psychiatrist to dressing the slightly wounded. While he was engaged at his work, several hundred cases of slight war neurosis were evacuated that would never have left their division if they had been examined by a trained psychiatrist.¹

Psychiatry as yet had not sold itself entirely to the "old timers" among the regular Army medical officers and line officers. The sale was not an easy one to make. Psychiatrists were still regarded by many as "nut pickers," "alienists," or at best, "dreamers." Psychiatry itself was still generally looked upon with disfavor, something to be resorted to only in extreme cases bordering on insanity. Even then, its value was doubted.

From 1923 to 1940 the government paid nearly one billion dollars for the care, treatment, and upkeep of World War I veterans with service-connected disabilities. Each psychiatric casualty of this war had cost over \$30,000.² In World War I, in which screening was practiced but psychiatric casualties were not treated in the combat zone and often superficially treated in the base hospitals, the discharge rate for psychiatric disorders was 0.8 per hundred. The need for a well-organized and comprehensive psychiatric service was obvious. In the face of these staggering statistics, however, the separate existence of the recently created Department of Neurology and Psychology was terminated and put under Medicine, where it languished. Consequently, when war came again in 1941, no plan was ready to be put into immediate effect and there were few adequately trained personnel. In the early phases of the war the neuropsychiatric casualties were again treated at rear installations, and only about 5 per cent were ever returned to

combat. In North Africa and Sicily, for example, these casualties were evacuated hundreds of miles to general hospitals in communication zones, frequently for trivial reasons. In December 1943, the Fifth Army set up a Psychiatric Treatment Center in Italy, near Caserta. From this time on, there developed an efficient method of treatment in the forward area.³ With this forward area treatment, a principle recognized 25 years before, 70 per cent of the patients returned to combat duty.⁴

In the Korean Conflict there was a minimum of delay and confusion. Through the efforts of such men as Col. John M. Caldwell, Chief of the Neuropsychiatry Division, Office of The Surgeon General, combat psychiatry had undergone marked development during the interval between World War I and the Korean Conflict. By means of appropriate regulations, training manuals, and other official military publications, the lessons of combat psychiatry learned during World War II had been incorporated into the doctrine and training of the Army Medical Service.⁴ The benefits of this preparatory work were realized when within a month after the fighting began in Korea, psychiatrists were assigned to each division and the approved psychiatric combat treatment was put into effect with excellent results. Over 80 per cent of the combat psychiatric casualties returned to duty within the theater. The manifest change in the general attitude toward psychiatry was largely due to the proved scientific ability and strenuous effort of the psychiatrists. They had won at last the wholehearted support and cooperation of the medical officers in other specialties, which in turn made psychiatry a truly integrated part of Army Medicine.⁵ Salmon had described psychiatry in World War I as

... the Cinderella of medicine, in that she had been ignored or unnoticed for so long by her sister specialties. The acute mental health problems of the War demanded that a search be made for the wearer of the slipper of healing for mental illness. Psychiatry came forward to fit the slipper and so to take her rightful place with the other specialties in the Army Medical Corps.⁶

It has been suggested that, as a result of World War II, psychiatry has become "at least in the eyes of some portion of the public, a pin-up girl."⁷

But what caused the lag of twenty-five or more years in formulating and authorizing effective treatment for these psychiatric casualties, whose speedy return to duty could increase manpower so appreciably? An answer to the question must be sought not in inefficient planning or administration, but in a deep-rooted concept which reaches back almost to the beginning of time.

Menninger noted that even today there is a lurking suspicion among the average laymen that consulting a psychiatrist might confirm the frequent fear of losing one's mind. "No doubt," he adds, "the historic era in which men were infected with witches and incubi, werewolves and devils, has some symbolic vestiges remaining today."⁸ Indeed, Gregory Zilboorg goes much further in his conclusion that witchcraft is the central cultural problem in the development of occidental psychiatry.⁹

To state that progress in psychiatry in military medicine has been held back by belief in witches is as misleading as it is astonishing; and yet, after reviewing the labored development of this newest medical specialty, the reader will realize the recency of the emancipation of psychiatry from the realms of the "supernatural." In ancient medicine there were two kinds of ailments: those due to "natural" causes—now termed organic—and those due to "supernatural" causes—today called neurotic, functional, or psychological. The diseases from natural causes were the realm of the doctor; the others were turned over to the church men or the law.⁹

When colonists began to settle in North America, Europe was still in the throes of "witch-hunting." The *Malleus Maleficarum*, composed by two friars in 1484 and published in 1487 and again in 1489, has often been considered responsible for many of the cruelties perpetrated all over Europe for a period of 300 years.⁹ This book attempted to prove, in the first part, the existence of

witches; in the second part, it described various types of witches and how to identify them; and finally, it outlined the legal form for examining and sentencing a witch. The second part, with a little editing, might serve as an excellent modern text book of descriptive clinical psychology of the Fifteenth Century, if the word "witch" were substituted by "patient" and the word "devil" were eliminated.⁹ Actually the *Malleus* was only used to further strengthen and add lay support to the Papal Bull of Innocent VII, in which he charged certain church men to seek out and punish witches. It is a mere reflection of the thinking of the age, rather than the original instrument for persecution of witches. Even medical science up until the end of the Sixteenth Century had generally gone along with public opinion and the jurist in believing and executing the old injunction, "Thou shalt not suffer a witch to live." This belief and practice was not even new when the Bible was written. The Egyptian *stele* related the story of a demoniacal possession of a princess in the twentieth dynasty of the Pharaohs. The only difference was that the princess, instead of being burned, was cured by the Egyptian god Khons.⁹ These psychopathic manifestations, however, were not frequent and were not resumed, except in a few isolated cases, until 3000 years after the Egyptian princess was cured. There was a brief period of psychiatric study following Hippocrates, but the general rule was persecution of the mentally sick, who were mistaken for witches. There came to be so little differentiation between a mentally sick person, a witch, and a heretic that by the end of the Thirteenth Century these terms were synonymous.

The field of medicine was limited to diseases from natural causes and excluded from anything which might be attributed to the devil and his witches. The mentally ill were frequently turned over to the monks for care. Moreover, because of the belief in free will, witches were held responsible for their plight and were liable for punishment. The idea persisted that a bewitchment was

permanent because it could have no human remedy and that even if God intervened, the cure would not be a human one. Unless God could cure the bewitchment, therefore, man himself must not try. The idea has demonstrated itself in therapeutic nihilism and represents a fundamental attitude of man towards mental disease.

Even though the church and the law agreed upon this attitude toward the mentally ill, the blame rests not on these institutions, but on man himself and this deep-rooted psychology which he has possessed from the dawn of his life on earth and from which he is not entirely free today.

Johann Weyer, a pupil of the famed Agrippa, might be termed the founder of modern psychiatry. In his master work [*De praestigiis daemonum, et incantationibus, ac veneficiis, Libri V, Authore Jeanne Wiero medico. Cum Caesareae majest. gratia et privilegio. Basileae, per Joannem Oporinum, 1563*] on the prestidigatory nature of the devil, he bid monks to leave the management of the bewitched to physicians and protested especially against the burning of witches. He argued that their so-called confessions were worthless, for the witches were really women and would confess, as a result of torture, to anything. Although his book was placed on the Church's forbidden list, it went into its third printing and was translated into the vernacular. Nevertheless, everyone, regardless of standing, business, or profession, seemed to oppose a medical man when he attempted to establish a sound medical psychology.⁹ The last witch to be killed in Germany was on March 30, 1775, and in Switzerland, on June 18, 1782. Even though Weyer died "tired of the spirit of the age" and feeling that he had failed, his contribution was great: "first, he introduced scientific, descriptive, observational method to clinical psychopathology, and second, he reclaimed the whole field of psychopathology for medicine."¹⁰ What was known as "Weyer's poison" gradually emerged a century later.

In physical illness a man is sick, knows he is sick, and seeks aid from a doctor. In men-

tal illness he often has to be convinced that he is ill. Hippocrates had to convince his contemporaries that the "sacred disease" was not sacred at all and should be treated by a doctor. Weyer had to convince his contemporaries that being bewitched was not a crime or a curse but was a disease which a doctor should and could treat. The psychiatrists of the Twentieth Century have also had to sell an unwilling public on the value and necessity of their work. This public antagonism is one reason why psychiatry entered the field of medicine later than any other branch of medicine; it is one of the chief reasons for its lagging development and application.

Persecution of witches was never widespread in the United States; in fact, except for a few brief years of the Salem hysteria (1691-1692), there were few instances of this practice, which in Europe was still thriving. But, even though "witches" as such were not tried and burned, their counterparts, the mentally ill and the psychoses, were misunderstood and were not scientifically treated. Haphazard records are found of village cases of distracted persons who were general nuisances or "quyt madd." One of the first recorded attempts to get institutional care for mental cases in the colonies is to be found in an old petition by the people of South Kingstown, in 1724, asking that one Joseph Major be restrained owing to his "incogitable deportment" and requesting that a "Bedlam or workhouse" be built at some convenient place to take care of such people. It reads, in part,

... that a Stop be put to the Cource of Such Who through Discontent or other waise Receive into their Vicious or Malicious Minds an Evil Spirit and as it were with Saul of old Let loose their hands to mischief Tho perhaps they may not be without hopes of being Saved or sheltered by the Habit of Distraction.¹⁰

It was obvious that the intent was to restrain rather than treat "mad men." Early American writers on the history of disease gave little attention to mental disease. After 1750 private hospitals were built for the insane and the states began establishing asy-

lums. The mild mental patients, however, remained at home or wandered around aimlessly to be flogged, put in stocks, or jailed if they became violent. People still regarded them as "bewitched," natural causes of their illness were not considered, and treatment was almost unknown.

During the Revolutionary War and the War of 1812, there is no mention made of psychiatric disorders among the soldiers; but in the records of the Civil War occasional references are found, and there were a few attempts to give the mentally ill soldiers at least a minimal amount of care in state hospitals. The word "care" is used advisedly, as treatment was still unknown, or at least not practiced. At their meeting in 1864, several members of the American Psychiatric Association had risen to discuss a "shocking situation concerning the discharge of insane soldiers without any provision for their safe return home or subsequent care and treatment."² It was reported that soldiers, incompetent to provide for their wants or find their way home, had been found wandering around in cities and elsewhere. One soldier, destitute of clothing and money, had been "passed along" a long line of train conductors; another was found in the woods in a helpless state trying to get home. Many lost their baggage, watches, and money. The Surgeon General, concerned over the report, issued a statement that any soldier found wandering at large without protection of guardians might be sent to the nearest asylum. Arrangements would then be made to have him transferred to the Government Hospital for the Insane in Washington, D. C. Moreover, the War Department would pay for his "keep" up to seventy-five cents a day, and for his transportation.² Toward the close of the war, recommendation was made by hospital authorities that "examining surgeons give more critical attention to the mental character of the candidate for service."² Thus, as early as 1864, the benefit derived from early screening was recognized.

The appointment of Dr. William A. Hammond as Surgeon General of the United

States Army, April 25, 1862, marked the beginning of consideration for the psychiatric casualty. A pioneer professor of nervous and mental diseases, he published in 1871 his "Treatise on Diseases of the Nervous System" and twelve years later his "Treatise on Insanity in Its Medical Relations."² As Surgeon General he gave S. Weir Mitchell and W. W. Keen an opportunity to work in neurology by creating a hospital especially for nervous diseases and later a larger one of 400 beds. The case histories, painstakingly compiled by these two doctors and their associates, were the basis of a book by Mitchell and of articles which revolutionized knowledge of nerve wounds. In other papers Mitchell described a "rest cure" for mental and nervous disorders and methods for distinguishing "malingerers" in the Union Army from those mentally ill. He concluded, "In deciding doubtful cases, the government, rather than the man, should be given the benefit of the doubt."² In an article entitled "The Evils of Youthful Enlistments and Nostalgia," Assistant Surgeon General De Witt C. Peters¹¹ (*American Medical Times*, February, 14, 1863) explained the greater susceptibility of teen age soldiers to mental disorders. He advised more thorough screening at the recruiting centers and condemned the practice of accepting under-age boys. Other studies were made of "nostalgia" among the soldiers, a malady which is reported to have affected 5,547 men in the Union Army during the period from May 1861 to June 30, 1866. This was 2.16 per year per 1000 average strength (including soldiers in general hospitals).

Scant notice of general psychiatric problems was given in the medical literature of the period, a fact which emphasizes the small interest of the medical doctors. Despite the courageous effort of a few, the general attitude of the public was antagonistic or, at best, nihilistic. This attitude, as has been shown, had improved very little fifty years later when in World War I the new terrorizing and lethal machines of war caused

human nervous resistance to reach its saturation point. The tremendous problem of dealing with thousands of neuroses gave impetus to better organization and better methods of treatment. Unfortunately, the lessons learned in World War I were soon forgotten, and the public became apathetic again. At the time of Pearl Harbor there was only one psychiatrist in the Office of The Surgeon General; there were only about thirty-five in the Army hospitals. The attitude still seemed to prevail, among those in authority, that psychiatry was a sort of necessary evil. Psychiatric patients were often suspected of being malingerers. It was generally believed that a good officer could force a neurotic man to become a good soldier. The psychiatrist was still considered to be a mysterious person surrounded with an occult aura. Many people seemed surprised to meet a psychiatrist who seemed "normal."

Even during World War II there continued to be a prejudice against psychiatric patients and a tendency to think of them as "yellow." Not until 1944 was psychiatry equated with medicine, surgery, and reconditioning in the military services, and not until February, 1945 was psychiatry authorized as a service in General Hospitals. Even then, there was such resistance that all hospitals did not conform until December, 1946.⁸ The psychiatric patients themselves were hesitant to admit their classification, and nearly every one discharged was deeply concerned about what his friends and relatives would think.

Not until the Korean Conflict could the general attitude toward psychiatry be described as sane and scientific. Experiences in this campaign confirmed and extended the techniques initiated in World War I and World War II.¹² Psychiatry and neurology were given a prominence which they had never before known in the Army. A warning was issued, however, in 1955 by D. B. Peterson, who feared that psychiatry might again be cast into the ash can as it had been after World War I. "Loss of awareness of military psychiatric principles may be already occurring," he stated. "Only frequent

rereading of the experiences of the past, with understanding of their validity, will preserve this knowledge of concepts and techniques, for which, so far, there is no substitute."¹³ Heeding this warning and pushing ahead especially into the still unexplored realm of preventive psychiatry, the specialists in this field have continued to achieve progress. Included in a report on Korean veterans with psychiatric disabilities in the clinics and hospitals of the Veterans Administration is this statement:

It is obvious that preventive measures and adequate facilities must be available in civilian life, not only to reduce the drain of monetary awards [*sic*] on the economy of the country, but more importantly to preserve and improve the mental health of the citizenry.¹⁴

Great progress had been made in the infancy of psychiatry when the cause of mental illness was no longer associated with the devil, with witches, or with other supernatural powers. Another significant step forward was made some years later with the scientific accumulation of the knowledge of methods of treatment. A third stage of development, which came in more recent times, has been that of preventive treatment.

Now we seem to be on the threshold of another step forward in the treatment of the psychoses. This is in the use of a number of new drugs that are capable of stimulating and depressing key brain centers and producing changes in the personality and conduct. It appears that these changes may be retained by suitable maintenance dosage.¹⁵

It took many centuries to break down the fundamental concept that the mentally ill were to be punished, remain untreated by medical men, or ignored; realization finally came that there were natural and curable ills of the mind as well as of the body and that no stigma or blame should be placed upon the unfortunate patient. It is an interesting fact that progress in this newest medical specialty was quickened by three wars.

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A Hearing Evaluation of a Squadron of Jet Aircraft Personnel

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(With four illustrations)

IT HAS been known for a long time that aircraft maintenance personnel are exposed to rather intense noise. In 1949 the Air Force formulated the policy of taking precautions to prevent excessive exposure to noises that could be considered to have a potential capability of producing "noise induced hearing loss." This policy was set forth in Air Force Regulation 160-3 entitled "Precautionary Measures Against Noise Hazards."

Since that regulation was issued rather extensive but scattered programs aimed toward "conservation of hearing" have been developed in the Air Force. During the same time period the interest of the general industry in this problem has increased and many hearing conservation programs have been established. Over this period of time a considerable body of data on the relation of hearing loss to noise exposure has been accumulated and evaluated.

On 29 October 1956 the Air Force published a revision of the "Hazardous Noise Exposure" regulation. This regulation is an attempt to take advantage of advances in our knowledge concerning the relation of hearing loss to noise exposure and to apply this information in the most realistic manner possible. It establishes an adequate Air Force wide program for the conservation of hearing and the prevention of other deleterious effects of noise. The program establishes specific audiometric procedures that are to be carried out to detect hearing loss that may be the result of exposure to noise. It also establishes procedures for the employment of

protection to prevent possible loss due to noise exposure and where this fails it provides that new duty assignments will be given to prevent an individual from acquiring a noise induced hearing loss severe enough to create a hearing disability.

The present study was conducted to gather information about the hearing of maintenance personnel in a typical Air Force Squadron and to obtain data for a preliminary evaluation of some of the procedures prescribed by the proposed revision of AF Regulation 160-3.

One hundred and forty-one maintenance personnel of the 56 FIS, Wright-Patterson Air Force Base, Ohio, were given a hearing examination which included: (1) a case history; (2) otorhinological examination; (3) two audiograms—the first one performed not less than 40 hours following the last noise exposure and the second one made 90 days later.

The proposed revision of this regulation specifies that an audiogram be obtained for each individual, military and civilian, at the time of entry into and termination of service. In addition it requires that another audiogram, called the "Reference Audiogram," be obtained for each individual prior to assignment to duty or training that may result in hazardous noise exposure. For those personnel currently working in areas where hazardous noise exposure may occur the regulation provides that the "Reference Audiogram" must be obtained not less than 40 hours following the last noise exposure. To meet this requirement all examinations to establish Reference Audiograms were made on Monday mornings. Ten to twenty men reported to the examiner each morning before report-

*Wright Air Development Center, Wright-Patterson Air Force Base, Ohio.

HEARING CONSERVATION DATA CARD NO. <input type="checkbox"/> (1)																								
A. IDENTIFICATION																								
Last Name First Middle										(2) ^o Status (2-10) ^o Social Security No. - Service Number					(10) ^o Sex									
SMITH, JOHN W A/c										Military: <input checked="" type="checkbox"/> Civilian: <input type="checkbox"/>					A015480772					M-Y <input checked="" type="checkbox"/> F-X <input type="checkbox"/>				
B. CURRENT NOISE EXPOSURE																								
(11-13) Dept. or location		(14-18) Job or Noise Code (AFSC/MOS)		(19) Time in Job								(20) Exposure Time		(21) ^o Wears Ear Protection Other than Dry Cotton During Exposure to Loud Noise		(21) ^o Most Frequently Used Ear Protection								
				Mss. Years												Class: Insert <input checked="" type="checkbox"/> Covers <input type="checkbox"/> Type: Elastic V5JR <input checked="" type="checkbox"/> Non-elastic (waxy) <input type="checkbox"/> Muffs <input type="checkbox"/> Rigid (fitted) <input type="checkbox"/> Other <input type="checkbox"/>								
02F		43151C		0 X 1 2 3 4 5 6 7 8								8 HRS		Always or Frequently <input type="checkbox"/> Seldom or Never <input type="checkbox"/>										
C. PREVIOUS NOISE EXPOSURE																								
Time in each Category																								
(22)		(23)		(24)		(25)		(26)		(27)		(28)												
Previous Job		2										Basic training		1 <input checked="" type="checkbox"/>										
Job before that												Combat-Light Arms		2 <input type="checkbox"/>										
All prior jobs												Combat-Heavy Arms		3 <input type="checkbox"/>										
												Hunting		4 <input type="checkbox"/>										
												Target Practice		5 <input type="checkbox"/>										
Ear protection		X		Y		Y		Y		Y		Y		Y										
D. MEDICAL HISTORY AND STATUS																								
R E																								
Aural Pain 1 <input checked="" type="checkbox"/>																								
Drainage 2 <input checked="" type="checkbox"/>																								
Ear Injury (mechanical) 3 <input type="checkbox"/>																								
Surgery (ear or mastoid) 4 <input type="checkbox"/>																								
Head Injury, with unconsciousness 5 <input type="checkbox"/>																								
Tinnitus Prior to First Noise Exposure 6 <input type="checkbox"/>																								
Tinnitus Following Exposure to Noise 7 <input type="checkbox"/>																								
Hearing Loss in Immediate Family 8 <input type="checkbox"/>																								
Malformation of External Ear or Canal 9 <input type="checkbox"/>																								
Obstruction of, or Drainage from Canal 10 <input type="checkbox"/>																								
Perforations of Drumhead 11 <input type="checkbox"/>																								
Upper Resp. Infection or Nasal Allergy 12 <input type="checkbox"/>																								
Tubal Obstruction 13 <input type="checkbox"/>																								
E. MOST RECENT NOISE EXPOSURE																								
(33) Time Since (34) ^o Duration of (34) ^o Used Ear Protection																								
Yes <input type="checkbox"/> No <input type="checkbox"/>																								
REMARKS:																								
PAIN AND DRAINAGE AS CHILD; UNCONSCIOUS - BOXING; FATHER WEARS HEARING AID.																								
F. HEARING LOSSES																								
Pure Tone																								
Speech																								
Before Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																								
(35) Day (36-38) (39-40) Age																								
(41) (43) (45) (47) (49) (51) (53) (55) (57) (59) (61) (63) (65) (67) (69) (71) (73) (75) Bin-																								
of Week Date-Mo/Yr																								
THURS 17 NOV 55 22 0 5 5 10 10 20 20 3000 15 0 5 0 5 20 15 20 3000 10																								

Fig. 1. Hearing Data Conservation Card.

ing to their squadron for work. The last man in each group was always examined before 1000 hours. The squadron reported that no particular hardship was experienced due to the absence of these men, as long as they were scheduled in advance.

The Hearing Data Conservation Card* shown in Figure 1 was used to collect the data. An explanation and a review of this card will indicate the information obtained from each man. All case history information was gathered in a personal interview situation by an experienced observer. The first section is identification, where name, service number, etc., was recorded. The next section

is concerned with current noise exposure. Here the duty AFSC was listed and the time in this job recorded. The frequency of use of ear protection and the type of protection was noted (e.g., kind of earplug or muff). There are two sections on previous noise exposure and most recent noise exposure. In the study we found it easier to describe in one or two sentences all of the information on exposure and then later categorize it for entry in the indicated spaces on the card. The section on previous noise exposure was filled in by describing the job in a short sentence because adequate codes are not available.

A rather brief otorhinological history was accomplished on each subject by the flight surgeon. The specific areas are noted on the card. They covered such questions as pain in the ears, damage, mechanical ear injuries (ruptured drums, etc.), surgery (ear or mastoid), head injury with unconsciousness, tinnitus prior to or following noise exposure

*This Form was originally prepared by the Subcommittee on Noise in Industry and modified slightly by a CHABA Working Group, who has recommended it for tri-service, plus industry use. This card is coded for IBM and it is planned to send a copy of all of these Data Cards to a central agency for statistical treatment.

and a history of any hearing loss in the family. Any positive finding was explained under the "Remarks" section.

The examination of the ears was also accomplished by the flight surgeon. The findings were noted under the indicated categories; malformation of the external ear canal, obstruction of or drainage from the canal (wax was removed manually by use of a loop or, if necessary, by ear lavage), perforation of the drum head, upper respiratory infection or nasal allergy, tubal obstruction (by use of valsalva maneuver with tympanic membrane under direct observation). The presence of large scars or calcific plaques which are not included on the form were also noted under "Remarks."

The last section on the card is entitled, "Hearing Loss" and acquiring of this data was, of course, the most time consuming. Pure tone threshold measurements were made at the following frequencies: 250, 500, 1000, 1500, 2000, 3000, 4000, 6000, and 8000 cps. A trained audiologist performed all tests using a Maico H-1 audiometer. Calibration was checked periodically with a sound level meter and daily by a check using the operator's ear. All tests were conducted in a double walled test room with an ambient noise level below 40 decibels.

RESULTS

The reference audiograms were analyzed in terms of the hearing classifications, Classes A, B, and C, as specified in the revision of AF Regulation 160-3.

Class A is defined as those having reference audiograms showing not more than 15 db hearing loss at any test frequency. Class B: Those having reference audiograms showing a hearing loss of 20 db or more at some test frequency, but not qualifying for Class C. Class C: Those having reference audiograms showing an average hearing loss, in either ear, of 20 decibels or more for the frequencies 500, 1000 and 2000 cps.

Table I shows the number of men assigned to each hearing class. It should be

TABLE I
NUMBER OF SUBJECTS IN CLASSES A, B, AND C
BASED ON REFERENCE AUDIOGRAMS

Class	Number of Subjects	Per Cent
Class A—No more than 15 db loss, any frequency.	56	40%
Class B—20 db loss or more, not to exceed Class C.	77	55%
Class C—Average of 20 db or more at 500, 1000, 2000 cps.	8	6%

noted that seventeen men were assigned to Class B because they showed a loss of 20 db or more at only one frequency. This one frequency was usually 4000 cps. Also, six men were in Class B because of losses at only 2 frequencies. All of the others in Class B had at least this amount of loss at more than 2 frequencies.

In Figures 2 through 4 the variability of hearing thresholds is shown for Classes A, B and C in terms of the number of ears with indicated threshold values for each of 9 frequencies. It should be pointed out that a hearing loss in one ear assigns a man to a particular category, while his other ear may be normal, therefore, there are normal ears appearing in both Figures 3 and 4 (Classes B and C). Note the normal distribution below and above the 0 value of the Class A group shown in Figure 2. The average threshold at each frequency agrees very



FIG. 2. Class "A" (Total 56 subjects—112 ears)—Mean.

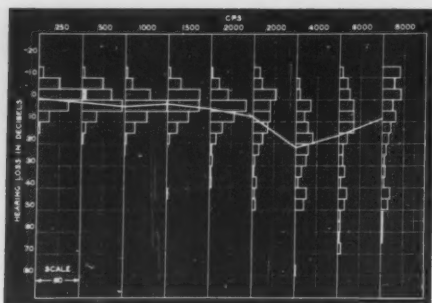


FIG. 3. Class "B" (Total 77 subjects—154 ears)—Mean.

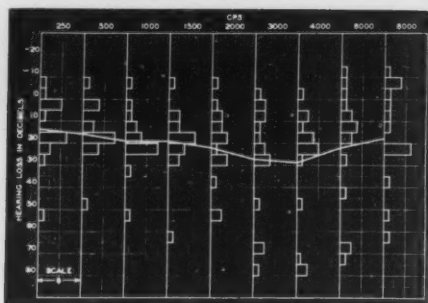


FIG. 4. Class "C" (Total 8 subjects—16 ears)—Mean.

closely with the 0 value of the audiometer. All of these subjects have hearing near enough to the average normal value to be considered to be within the range of normal hearing.

The Class B group is shown in Figure 3 and there is considerable spread of threshold values at frequencies from 2000 cps to 8000 cps. Therefore, some men had substantial losses in these frequencies. It is interesting that the average hearing loss curve for these 77 men exceeds the 20 db criterion for Class B at only the 4000 cps frequency, and then only by 3 db. The average hearing loss for this group is within the range of normal hearing (plus 15 db) except at 4000 cps and 6000 cps. We have no evidence that the men in this group did not have these losses when they entered the service. This fact emphasizes the necessity for obtaining pure tone threshold audiograms at the time an individual enters the service.

The same information for the group of eight men in Class C is shown in Figure 4. Notice that the average curve just barely meets the criterion for Class C group; an

average loss of 20 db at 500, 1000 and 2000 cps. Three of the men in this class had severe losses in one or both ears. Although the duty AFSC was recorded for each man, it is not much help in defining his noise exposure. For example, an airframe mechanic may work on the line one day and in the hangar the next. The noise levels in both areas are likely to be high, but not necessarily the same. There is little stability of assignment in an operational situation. In addition, operations themselves vary widely and so does the noise level that results from them. It is, therefore, difficult to quantify an individual's noise exposure. The noise levels at specified distances from given aircraft are known. For example, it is known that a mechanic working in the nose well of an F-86D can be exposed to levels as high as 130 db, while the noise levels inside a hangar may be below 100 db.

Table II shows the duration of all aircraft maintenance experience as percentage of the total group in each of the hearing classes. Up to five years of experience, on a percentage basis, about as many individuals

TABLE II
TIME IN JOB VERSUS HEARING CLASS

	Months			Years								
	0-2	3-5	6-11	1	2	3	4	5	6	7	10	12
Class A	18%	7%	7%	11%	12%	25%	9%	7%			2%	2%
Class B	10%	3%	8%	13%	4%	21%	8%	19%	6%	4%	1%	3%
Class C	12%	12%			25%		12%	25%			12%	

are found in each period of exposure in both A and B classes. The maximum number of men in both A and B are found in the three year experience category. Both Class A and B had men with as much as twelve years' experience. It is also interesting to note that two Class C men had less than five months' experience.

In Table III the number of men in the specified age groups for the three classes of hearing are shown. Class A had the most men in the 18-24 year age groups (46 men),

TABLE III
AGE GROUPS VERSUS CLASSES

Age	18-24	25-31	32-38	39-45
Class A (Total 56)	82%	12%	2%	4%
Class B (Total 77)	58%	17%	18%	7%
Class C (Total 8)	50%	37%		13%

with only three men over 31 years of age. Class B also has the most men in the 18-24 year group (45), but also has 13 men in the 25-31 year group, 14 in the 32-38 year group and five men in the 39-45 group. The presbycusis curve for the 40 year age group is 10 db at 4000 cps* (the frequency with the worst average loss for Class B), and in this study the average loss at 4000 cps was 23 db. Also, according to present criteria, losses at this frequency are not important for speech communication and are not used in estimating hearing disability. Seven of the 8 men in Class C were under 32 years of age.

There was nothing in the medical history and status that would correlate or account for apparent differences between the three hearing classes, also there was no difference between Class A and B as to the use of protective devices.

The repeat audiograms were made 90 days

plus or minus 2 weeks from the date of the Reference Audiograms. During this time 11 men had been transferred, 8 men were discharged, and 2 men were on TDY. The proposed revision of the regulation specifies that when an individual (designated as having Class A hearing) shows, at the time of any re-examination, a threshold shift of 20 db or more (relative to the Reference Audiogram) at any test frequency in either ear, the examinee will be retested after not less than 15 hours but before his next hazardous noise exposure. All 90 day audiograms were made on days other than Mondays with no effort to control the noise exposure. However, no tests were made less than 1 hour after the last exposure. All men then were subjected to the routine exposure of their jobs. Three Class A men had increased hearing losses of 20 db or more and thus met the criterion for the repeat 15 hour audiogram. The hearing of 6 Class A men improved this same amount.

The regulation provides that for those having Class B hearing who (at the time of re-examination) show a temporary threshold shift of at least 10 db* at 2000 cps, or 15 db* at 3000 cps, or 20 db* at 4000 and/or 6000 cps in one or both ears exists, a 15 hour audiogram is required. Threshold shifts for 11 men met this criterion of an increased hearing loss while the hearing of 20 men improved a similar amount.

The lack of control of the noise exposure during the 90 day period makes it difficult to draw any precise conclusions regarding these changes of threshold. Some men were tested one hour from their last exposure while others might have just returned from leave or pass. It is impossible to control this factor in an operational situation so the aim is to obtain sufficient information to present general statistical trends which will provide guidance for the over-all hearing conservation program. It is interesting to note that the number of men in all 3 classes, that showed improved hearing was greater than the number that showed further decrement in hearing losses.

* *The Relations of Hearing Loss to Noise Exposure*, American Standards Assoc. Inc. 1954.

In summary, this study shows the hearing capabilities of men in a typical squadron of jet aircraft mechanics (141 men); Class A: 40%, Class B: 55%, Class C: 6%. All Class A subjects are within the limits of normal hearing. The average loss for Class B exceeds the normal hearing curve only at 4000 and 6000 cps. Class C men of course show the more serious losses. After 3 months of routine noise exposure 3 men in Class A showed increased hearing losses of 20 db or more at some frequency while 6 men showed

a 20 db improvement in hearing. In Class B 11 men showed an increased loss of 10 db at 2000 cps, 15 at 3000 cps and/or 20 db at 4000 and 6000 cps, while 20 men showed improved hearing of this same amount.

It would appear that the application of the procedures prescribed in the revision of this regulation, that were evaluated in this study, are practical and feasible and will insure better protection of the hearing of Air Force personnel than has ever been provided in a military situation.



LEADERSHIP

Good leadership implies consideration of those who follow. It requires a communication system that works both ways—from the bottom up, as well as from the top down.—DR. WM. MENNINGER, in address at American Association of Advertising Agencies.

Replacement Arthroplasty in Military Patients

By

LIEUTENANT COLONEL EARL W. BRANNON, USAF (MC) (F.A.C.S.)*

(With four illustrations)

REPLACEMENT arthroplasty of damaged joints has gained widespread interest and application during the past decade. Various materials, notably metal and plastics, have been used in the fabrication of these artificial joint devices. In regard to major weight-bearing joints such as the hip, there has been much controversy as to the value of this method and differences of opinion will continue until there has been sufficient time lapse to obtain an adequate evaluation of clinical results.

The method of replacement arthroplasty might seem more suitable in joints not subjected to the trauma of weight-bearing. In our experience in the larger military hospitals, we see a significant number of damaged finger joints resulting in permanent disability. These injured fingers often result in complete destruction of the joint with residual deformity and pain, rendering the part functionally useless. Many types of arthroplastic procedures have been devised in an attempt to correct these conditions; however, none of them have been entirely satisfactory because of the problems of residual stiffness and lateral instability.

A new type of prosthetic replacement for irreparably damaged joints of the finger has been developed in an effort to find a more satisfactory solution to this problem (Fig. 1). The prosthesis is a replica of the normal joint and replaces the entire joint. Primarily designed for the proximal interphalangeal joint of the finger, the device is fabricated of stainless steel, consists of two parts joined by a simple hinge joint which is locked by a half threaded screw and nut, and each part has a triangular intramedullary



FIG. 1. Diagram of metal prosthesis.

stem for insertion into the bones of the finger (Fig. 2). The hinge joint is finely beveled to prevent irritation of the soft tissues during movement, and the prosthesis is so designed to prevent residual rotation of the finger and instability (Fig. 3).

Indications for the procedure consist of an irreparably damaged middle or proximal finger joint with functionally restorable tendons, intact nerve supply, and adequate circulation in the finger. All our cases have been a result of trauma; however, the same type of replacement would apply to a diseased joint provided the condition of the soft tis-

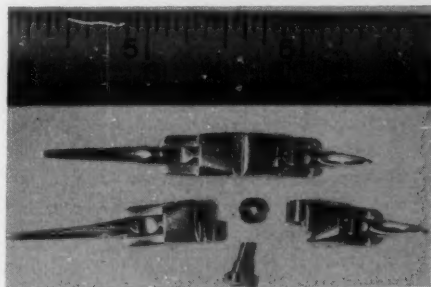


FIG. 2. New type prosthesis assembled and disassembled with component parts.

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FIG. 3. X-ray showing replacement of joint with prosthesis.



FIG. 4. Result after operation, showing degree of flexion.

sues permits. Any active inflammatory process would be a contraindication to this procedure.

The operation is performed under general anesthesia and with a pneumatic tourniquet. A short mid-lateral incision is made on the ulnar aspect of the finger over the involved joint. The extensor mechanism is carefully retracted and the joint capsule incised laterally. Resection of the entire joint is performed with a small Gigli saw, leaving a space approximately one cm between the bone ends. The medullary canal of each phalanx is then prepared with a triangular reamer, after which each half of the prosthesis is inserted separately. The two halves of the device are then joined and the hinge joint locked with the screw and nut. After this is accomplished, the finger should be straight and there should be no abnormal rotation. The new joint should glide freely from full extension to full flexion. One cc of hydrocortisone is left within the joint after which the wound is closed. The finger is immobilized in full extension until the wound has healed, and then active exercises are instituted.

Ten cases have been operated on over a period of thirty months. In each case there had been destruction of the involved finger

joint resulting in a stiff and useless finger, usually ankylosed in extension. Most of the cases were referred for either amputation or arthrodesis of the part. In each case, the prosthetic replacement of the joint restored a functional range of painless motion and the cosmetic appearance of the hand was improved by correcting the existing deformity (Fig. 4). There was no residual problem of lateral instability with the finger extended and no abnormal rotation of the finger or slipping of the prosthesis was observed. Moreover, there appeared to be no untoward tissue reaction to the stainless steel material. The patients readily accepted the trial of a replacement prosthesis as an alternative to amputation or arthrodesis and all expressed satisfaction with the result. All cases returned to full military duty after a short hospitalization period.

CONCLUSION

A new method of replacement arthroplasty with a metal hinge type prosthesis for damaged joints of the finger has been described. The procedure is an alternative to amputation or arthrodesis and is designed to restore a useful degree of function in an otherwise stiff and useless finger. The results in this brief series have been sufficiently encourag-

ing to warrant further attempts at this method of replacement arthroplasty.

ACKNOWLEDGMENT

Grateful acknowledgement is extended to Gerold Klein, Dr.med., Wiesbaden, Ger-

many, for his invaluable assistance in this project; to the University of Mainz, Germany, for furnishing material for study; and to the Ulrich Surgical Company, Ulm/Donau, Germany, for their utmost cooperation in the fabrication of the prosthesis.



NAVY NURSE CANDIDATE PROGRAM

The Navy has announced a new Navy Nurse Corps Candidate Program which will give selected senior college nursing students an opportunity to join the Navy while continuing their education, and on completion be commissioned as Ensigns in the Nurse Corps.

The Navy plans to enroll annually a number of nursing students enrolled in fully approved basic collegiate schools of nursing, when they begin their senior year. These selectees will be placed in pay grade E-3 and will receive the pay of that grade plus tuition, fees, books, room and board throughout their senior year. Upon receipt of their baccalaureate degree in nursing, they will be commissioned Ensigns, Nurse Corps, Naval Reserve, with a two-year active duty obligation. Applicants must be between the ages of 20 and 33½ at time of graduation.

For more information regarding this program, inquiries should be directed to the Director of the Nurse Corps, Bureau of Medicine and Surgery, Navy Department, Washington 25, D.C.

The Use of Pull-Out Pins in the Treatment of Fractures—With Particular References to the Os Calcis*

By

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(With three illustrations)

THE pull-out pin was originated before this author's time and has provided excellent fixation for fractures over a period of many years. For the past 20 years the author's experience with the pull-out pins has been very satisfactory. In certain instances the pins have successfully "pulled the operator out" of a difficult surgical situation. There have been no problems of infections about the pins. Complications have been few. With this method no metal is left in the patient as the pin is easily removed. It was therefore considered that this method of fixation deserved this additional report.

Many surgeons fear to leave the pin extending from the bone outwardly through the soft tissues and skin. However, skeletal traction has a long history of successful and satisfactory utilization. External pin fixation has been a safe method. By the use of skin fixation about the pin and the mobilization of the pin hole in the skin, the irritation can be definitely avoided. This is a very important step however, in the avoidance of the problem of skin contact with the pin in the elimination of irritation.

The pull-out pin is merely a pin which extends across the fracture site giving stability to apposition. In addition it extends out through the soft tissues and skin so that after the fixation is no longer needed the pin can easily be removed at the office. This eliminates an anesthetic and hospital period with its attendant risk and possible complications and also cost. A cast is usually neces-



FIG. 1. Fracture of the os calcis with superior posterior facet articular surface displaced distally into the body. By open reduction this surface was elevated back into position and packed with bone grafts. However, the surface had an antero-posterior fracture line running through it and the two segments were offset. It was impossible to maintain position without use of internal fixation.

sary for additional fixation, chiefly to aid in maintenance of satisfactory alignment. In the author's cases, the pull-out pin is not incorporated into the cast. It is merely sealed off with sterile dressings about its junction with the skin; then several layers of sponge rubber are applied and are pushed against the skin using adhesive tape or a fixation nut on the pin to add proper pressure from the pin through the sponge rubber, to the skin. This keeps the skin from moving up and down on the pin. The pin must not be allowed to move in and out of the bone. It is then surrounded by dressings and then the cast is applied and all pressure and contact on the pin are avoided.

At a later date when the pin has served its purpose an opening is made with the electric cast-cutter; the pin is exposed and by that time there is usually sufficient bony

* Presented to the American Fracture Association National Meeting in Chicago, Ill., November 29, 1956.

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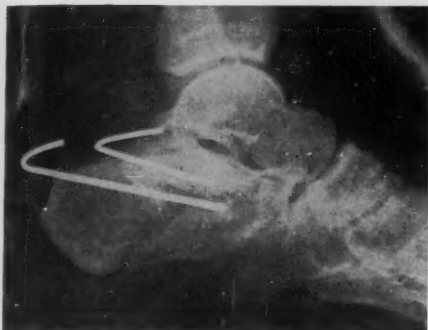


Fig. 2. Pull-out pins were selected and gave excellent fixation during the open procedure as illustrated.



FIG. 3. Reveals the healed fracture of the os calcis in excellent position.

absorption to allow the pin to be easily slipped out of the bone and wound.

The following conditions have been treated satisfactorily in the author's experience:

1. Dislocation of the acromio-clavicular and also sternoclavicular joints.
2. Fractures of the shaft of the clavicle with severe displacement and comminuted fragments which might cause pressure on surrounding structures.
3. Fractures of the upper shaft and metaphysis of the humerus.
4. Fractures of the lower end of the humerus, such as "T" fractures, intercondylar fractures, fractures of the capitulum with marked displacement and fractures of the lower shaft of the humerus in children and on elderly people with osteoporotic bones.
5. Fractures of the shaft of the forearm bones in children which are compounded or which cannot be maintained by closed reduction.
6. Occasional fractures of the phalanges and metacarpals of the hand or metatarsals of the feet which have to be managed by

open reduction.

7. Fractures of the os calcis with displacement and/or comminution of the articular surface of the superior posterior facet.

8. Fractures or dislocations of the metatarsal tarsal joints or metacarpal carpal joints.

9. Arthrodesis of the interphalangeal or metacarpal carpal or metatarsal tarsal joints.

All fractures and dislocations of course are managed as conservatively as possible and this is merely a listing of a few of the types of conditions which actually had to be opened. The majority of fractures in the author's practice were of course treated conservatively.

CONCLUSIONS

This paper merely serves to point out and illustrate a well known fact that pull-out pins are useful in the treatment of certain fractures on certain occasions.

Properly applied and adequately followed, this method is highly satisfactory.

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Removal of CBR Contaminants from Water

By

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REMOVAL of chemical, biological, and radiological (CBR) contaminants from water is an essential part of the task of producing safe, palatable drinking water on the field of combat.

CBR contaminants of water are not necessarily weapons in themselves but may result from the use of weapons. For example, a biological contaminant may be nothing more than a well known disease producing organism which has been released in quantity to the environment by a general breakdown in area sanitation. Perhaps the best known of the potential contaminants of field water supplies is radioactive fallout resulting from the use of nuclear weapons.

In the more than a decade since the end of World War II, great strides have been made by the United States Army in the development of new equipment and methods for the production of field water supplies. The program, which is continuing, has included studies of numerous contaminants and decontaminating procedures. Some of the results of this research, conducted by the Engineer Research and Development Laboratories, have been reported in the literature.^{1, 2, 3, 4} Of particular interest to the sanitary engineer and to the military surgeon are the results of pilot plant studies of the effectiveness of water treating chemicals and methods in removing representative types of CBR contaminants from water. A summarization and discussion of the results of one series of such studies are the objectives of this paper.

CONTAMINANTS

The contaminants used in this series of study are shown in Table I. Choice of ma-

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TABLE I
LIST OF CONTAMINANTS

Chemical

1. Lewisite (L)
2. Nitrogen Mustard (HN-3)
3. Nerve Poison GA
4. Nerve Poison GB

Biological

1. *Escherichia coli*
2. *Salmonella typhosa*
3. *Coxiella burnetii*
4. *Clostridium botulinum* toxin

Radiological

1. Mixed Fission Products (MFP-2) reactor produced, approximately two months old

terials was based largely on availability, ease of handling under test conditions, and the desire to develop data representative of a wide range of contaminants. The chemical and biological contaminants were prepared by the U. S. Army Chemical Corps. The radiological materials were obtained from the Atomic Energy Commission, Oak Ridge National Laboratory, Oak Ridge, Tennessee. The chemical agents were delivered to the test sites as refined liquids in glass and steel containers; the biological materials as stock suspensions of high concentration in glass containers; and the radioactive contaminants as nitric acid solutions in shielded containers.

PILOT PLANT APPARATUS

The pilot plant consisted basically of a suspended solids contact clarifier called an Erdlator, two diatomite filters, and several 1,500 and 3,000 gallons capacity water storage tanks. The facility was similar in design and operation to the new mobile water purification unit⁵ developed by the Engineer Research and Development Laboratories for field use. The equipment permitted a wide choice of treatments including pretreatment with activated carbon or clay, coagulation

with ferric chloride and pulverized limestone, prechlorination with calcium hypochlorite, and filtration through diatomite filters.

The rated capacity of the pilot plant was 30 gpm. The apparatus required one man to operate; a second man being required to put the contaminants in the raw water and to collect samples. When using the nerve poisons, a physician was required to be immediately available at all times to administer an antidote if needed. To handle the biological contaminants safely, it was necessary to use protective clothing.

TEST PROCEDURES

The test procedures were varied throughout these studies in accordance with guidance provided by earlier unreported laboratory studies using the same or similar contaminants. In each instance the contaminant was applied either in a batch or as a continuous proportioned feed to the raw water. The contaminated water was then treated as follows:

Chemical Contaminants. For the removal of nitrogen mustard and lewisite, activated carbon (Nuchar C115), equivalent to 600 ppm, was placed in an empty tank and the contaminated water added. Time to fill the tank was 20 minutes. The resulting suspension was slurried for 30 minutes with a recirculation pump, after which the water was coagulated and clarified in the Erdlator and filtered. The average total time of carbon contact with the contaminated water was 65 minutes. Samples of the water taken at various stages of contamination, decontamination, and treatment were analyzed for concentration of the contaminant. The spontaneous hydrolysis rate of the contaminants was determined at the test water temperature. After filtration, the water was chlorinated in the laboratory to a 30 minute residual of approximately one ppm and samples submitted for odor and taste tests by members of a volunteer taste panel.

To remove the nerve poisons, soda ash was added proportionally to the contami-

nated water as it was pumped into a tank. Time to fill the tank was 20 minutes. Samples were taken at intervals and analyzed for concentration of agent. The water was then coagulated and filtered.

BIOLOGICAL CONTAMINANTS

The biological contaminants were added proportionally to the raw water through the use of a small capacity diaphragm pump. Operating procedures were changed as required to permit evaluation of coagulation, filtration, and disinfection; coagulation and filtration; and filtration alone. In one instance the equipment was operated at 133 percent of rated capacity. Samples of contaminated raw water, coagulated water, and filtered water were taken at intervals for analysis. Laboratory procedures included the use of mice and guinea pigs.

RADIOLOGICAL CONTAMINANTS

Water containing the radiological contaminant was pumped to pretreatment tanks for the addition of clay or directly to the water treatment apparatus. In the former instance, clay indigenous to the ORNL area was slurried for a total contact time of 60 minutes prior to coagulation, disinfection, and filtration in the treatment apparatus. In all other instances, the contaminated water was treated routinely in accordance with the normal operating procedures for an Erdlator unit. A radioactivity count was made on each sample by evaporating 1 ml of the sample to dryness in a planchet and counting in a lead shield equipped with a Geiger-Müller mica end-window tube connected to a 64 scaler.

RESULTS

Typical results of tests using activated carbon to remove lewisite (L) and nitrogen mustard (HN-3) from water are shown in Table II. The removals achieved are representative of results obtainable with vigorous slurrying with carbon followed by good coagulation and filtration. The emergency tolerance for lewisite in drinking water is 20

TABLE II
REMOVAL OF VESICANTS BY
CARBON TREATMENT

CONTAMINANT	L	HN-3
RUN NUMBER	11	13
Decontaminant	C-115	C-115
Dosage (lb/1000 gal.)	5	5
(ppm)	600	600
Raw Water Temperature (°F)	41	41
Turbidity (ppm SiO ₂)		
Raw contaminated	20	20
Decontaminated	0.2 (filtered)	11
Coagulated	10	7.5
Filtered	<0.1	<0.1
pH		
Raw	4.0	6.55
Decontaminated	4.5	6.5
Coagulated	6.3	6.84
Filtered	6.3	6.91
Agent (ppm)		
Raw	30.5	25.5
Decontaminated	4.3	2.85
Coagulated	1.9	1.2
Filtered	0.7	1.15

ppm for one week and two ppm for one week for nitrogen mustard. Taste panel results are shown in Table III. The reported chlorine taste was due to the post-chlorination to one ppm and was not associated with

either of the contaminants. The decontaminated water was palatable and safe to drink.

Results of the use of soda ash (elevated pH) on water containing GA and GB are shown in Table IV. The results of one run on GB using only coagulation and filtration at pH 6.8 are also shown. The emergency tolerance level for both poisons is 0.5 ppm for three days. The mechanism of removal is hydrolysis, the rate of which may be increased by elevating the pH and/or the water temperature. While soda ash was used in these tests, other materials including lime would have been equally effective. At the relatively low water temperatures of from 41.9 to 45.5°F, the hydrolysis rate was slow; 3 to more than 4½ hours being required to reduce the concentration of the contaminants to acceptable levels. It will be noted that the filtered water contained hydrogen cyanide. This is a product of the hydrolysis of GA. If desired, the cyanide may be reduced or removed by aeration. The results of Run No. 5 serve to emphasize that neither GA or GB can be removed or effectively reduced by coagulation at low pH. Taste panel results are shown in Table III.

The results of the studies using biological contaminants are summarized as follows:

(a) The concentration of *Escherichia coli*

TABLE III
PALATABILITY OF DECONTAMINATED WATER

Agent	Taste Panel Results	Additional Remarks
L	9/ 9—Acceptable	4/ 9—Very good water 1/ 9—Slightly flat 5/ 9—Slight chlorine taste
HN-3	10/10—Acceptable	4/10—Very good water 4/10—Slight chlorine odor and/or taste 1/10—Slightly flat
GA	9/ 9—Acceptable 10/10—Acceptable	4/ 9—Cyanide or medicinal odor 2/ 9—Cyanide taste 5/10—Slight taste—acid biting or metallic 1/10—Cyanide odor
GB	6/ 6—Acceptable	1/ 6—Slightly flat 1/ 6—Very slight salty taste 1/ 6—Very slight biting sensation

in the raw water ranged from 1.3×10^6 to 1.6×10^6 organisms per ml. Coagulation and filtration (no disinfection) removed 100 percent of the test organisms. Coagulation alone removed an average of 97.14 percent and diatomite filtration removed all of the remaining bacteria. When the raw water was chlorinated to a 20 minute residual of 0.1 ppm, no organisms were found after coagulation. The pH of the chlorinated water averaged 8.2; the water temperature 67°F . This rather spectacular performance is in line with the previously reported findings⁶ that polluted surface water which has been coagulated, clarified, and filtered through a

diatomite filter may approximate U. S. Public Health Service standards without chlorination.

(b) The concentration of *Salmonella typhosa* in the raw water ranged from 8.0×10^4 to 3.8×10^5 organisms per ml. Coagulation and filtration removed 99.99 percent of the test organisms. Coagulation alone removed an average of 99.48 percent and diatomite filtration removed 99.20 percent of the remaining organisms. When the water treatment equipment was operated at 133 percent of capacity, coagulation and filtration removed slightly less than at rated capacity. Coagulation alone removed an average of 98.09 percent and 89.75 percent of the remaining organisms were removed by filtration. When the raw water was chlorinated to a 20 minute residual of 0.35 ppm, no organisms were found in the filter effluent. The pH of the water averaged 8.0; the temperature 65°F . The test did not develop the minimum chlorination residual at which apparent sterility of the effluent is achieved. In direct filtration of the raw water, the diatomite filter removed 98.85 percent of *S. typhosa*.

(c) The *Coxiella burnetii* contamination was reduced to an undetectable level by the combined processes of coagulation, filtration, and chlorination to a 20 minute residual of 0.75 ppm or above. At chlorination levels of 0.2 and 0.5 ppm, the contaminant was still detectable in the filtered water. The contaminant concentration in the raw water was approximately 7,000 guinea pig IP ID_{50} per ml. The pH of the treated water was not recorded but is estimated to have averaged 8.0-8.3. The temperature of the treated water averaged 64°F .

(d) The concentration of *Clostridium botulinum* toxin in the raw water was approximately 12,000 mouse IP LD_{50} per ml. Coagulation and filtration reduced the concentration appreciably; individual samples showing no evidence of contamination. Coagulation, filtration, and chlorination to a 20 minute residual of 0.5 ppm reduced the contamination to an undetectable level. The pH

TABLE IV
REMOVAL OF NERVE POISONS BY SODA
ASH TREATMENT

CONTAMINANT	GA	GB	GB
RUN NUMBER	6	5	3
Decontaminant	Soda Ash	None	Soda Ash
Dosage (lb/1000 gal.)	0.77	0	0.8
Raw Water Temperature ($^\circ\text{F}$)	45.5	41.9	43.7
Turbidity			
Raw water	10	10	18
Decontaminated water	12.5	—	25
Coagulated water	—	0.1	7
Filtered water	<0.1	<0.1	<0.1
pH			
Raw water	6.9	6.4	6.7
Decontaminated water	9.7	—	9.85
Coagulated water	7.6	6.8	5.7
Filtered water	7.6	6.8	5.6
Agent (ppm)			
Raw water	25.2	28.3	28.2
Decontaminated water	0.6 in. 4½ hr.	—	0.44 in. 3-4 hr.
Coagulated water	<0.04	24.1	0.1
Filtered water	<0.04	22.6	0.1
CN—Concentration (ppm)			
Raw water	0.15	—	—
Decontaminated water	4.7	—	—
Coagulated water	3.7	—	—
Filtered water	3.5	—	—

TABLE V
REMOVAL OF MIXED FISSION PRODUCT CONTAMINATION FROM WATER
AVERAGE OPERATIONAL AND CHEMICAL DATA

Operational Data				
Run Number	1	3	4	5
Date of run	22 Apr	26 Apr	28 Apr	4 May
Raw water temp (°F)	72	76	72	63
Pretreatment				
Material	Clay	None	None	None
Dosage (ppm by wt)	760	—	—	—
Contact time (min)	50	—	—	—
Coagulation				
Ferric chloride (ppm)	66	26	20	26
Limestone (ppm)	109	84	88	75
Chemical Data				
pH				
Raw water	8.8	8.0	7.8	7.8
Pretreated water	8.9	—	—	—
Coagulated water	7.9	7.6	7.6	7.6
Filtered water	7.9	7.6	7.6	7.6
Turbidity (ppm)				
Raw water	10	11	12	13
Pretreated water	337	—	—	—
Coagulated water	25	0.5	3.2	2.7
Filtered water	<0.1	0.1	<0.1	<0.1

of the chlorinated water averaged 7.8; the temperature 64°F. Direct filtration had little or no effect on the level of *C. botulinum* toxin in the water. In a sample of the raw water, allowed to stand at room temperature, *C. botulinum* toxin could not be detected after 62 hours.

Results of treatment of water containing mixed fission products are shown in Tables V and VI. All of the runs shown were conducted with material from the same batch of reactor-produced mixed fission products. The contaminant was approximately two months old at the start of the test series. The initial level of contamination ranged from 8.0×10^{-3} to 1.1×10^{-1} microcuries per ml. In Run No. 5, Table V, it will be noted that the coagulated water turbidity was high; the average being 25 ppm. In this case the high turbidity was due to undercoagulation caused by inadequate mixing. In the removal of radioactivity with clay slurring, it does not appear necessary to

achieve a high degree of clarification by coagulation and sedimentation provided the filter removes essentially all of the material

TABLE VI
REMOVAL OF MIXED FISSION PRODUCT CONTAMINATION FROM WATER

Run No.	Process	Removal of Activity (%)
1	Pretreatment with clay and coagulation	91.2
	Pretreatment with clay, coagulation and filtration	92.8
3	Coagulation	86.0
	Coagulation and filtration	87.5
4	Coagulation	84.5
	Coagulation and filtration	86.5
5	Coagulation	80.2
	Coagulation and filtration	83.9

remaining in suspension. The removals achieved by coagulation and filtration varied little from an average of about 86 percent. The contaminant removed was in solution. It is reasonable to assume that had all or part of the contaminant been in suspension, that portion in suspension would have been almost entirely removed by the combined treatments of coagulation and filtration.

SUMMARY

Selected data are presented from a continuing study by the U. S. Army of the problems of removing CBR contaminants from water. The results presented are considered typical of the performance experienced with the contaminants, the processes, and the test apparatus described. The removal of lewisite and nitrogen mustard from water was effectively accomplished using large dosages of activated carbon while elevated pH increased the rate of hydrolysis of the nerve poisons. In all cases the chemical contaminants were removed or reduced to acceptable levels and safe, palatable drinking water was produced. The biological contaminants studied, *E. coli*, *S. typhosa*, *C. burnetii*, and *C. botulinum* toxin, appeared to be readily removed or inactivated by normal or slightly modified field water treatment processes. The removal of dissolved, two-months old, reactor-produced, mixed fission products from water by coagulation and filtration averaged approximately 86 percent. This figure was significantly im-

proved by slurring the contaminated water with clay prior to coagulation, clarification, and filtration.

ACKNOWLEDGMENTS

Acknowledgment is made of the material assistance in this investigation by Mr. Joseph P. Epstein and Dr. Clifton J. Spendlove, U. S. Army Chemical Corps; Lt. Colonel Juan Ramos, HSC, U. S. Army Medical Service; Mr. Roy Morton, Health Physics Division, Oak Ridge National Laboratory, and their staffs.

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EDITORIALS

Thanksgiving

WHAT can we be thankful for on this Thanksgiving Day?

We may be enjoying good health, have some money, have a happy family and friends, and not have a care in the world. Who could not be thankful under those conditions?

We may, however, be in an entirely contrasting picture of life: poor health, no money, only the clothes on our back, no job, no family, and think we have no friends. In such a dismal surrounding what would we be thankful for? How could we be thankful?

Well, we still have America and the American way of life. For that we can be thankful. No matter how oppressed we may think we are or how far down the ladder we may actually be, in America there is always someone ready to give a helping hand. There are individuals ready, yes seeking, to extend that helping hand when one is really in need. No one need to be deprived of the essentials of life in America.

In this wonderful country of ours we can express our thoughts in as few or as many words as we wish; food is not denied because we may disagree with a principle of government; we may even get up on a stump and denounce our leaders. Where is life so good?

We are thankful for America—our country.

Fitness of American Youth

THE program for Fitness of American Youth actually must start before the birth of the child and must continue through the adolescent period. Judging from the many courses being given in Mother and

Baby Care, and the better care of the mother and baby in this country we seem to be starting life off better than in past years.

But from that period of infancy on we have become very lax in our efforts for American Youth. Now we are thinking of the physical rather than the moral and mental facets of this important subject. We do not mean to de-emphasize anything that is being done on the moral and mental side of the picture. But we do want to emphasize the physical side.

President Eisenhower appointed some time ago a Citizens Advisory Committee on Fitness of American Youth. He certainly had in mind the physical aspect of this *Fitness*, as well as any other facet.

In this day in America youth is blessed or damned, according to one's own idea, by the automobile. We cannot deny that there is a lot of gasoline used by the American youth for which muscle might be used instead. It is not uncommon for youth to jump into an automobile to go to a store or a friend's house only a few blocks away rather than to use the leg muscles that God has given him. The car suffers and so do the leg muscles; well, certainly over a period of time.

Then along comes that wonderful invention—television. By means of television we are informed not only through our ears but through our eyes. What a wonderful invention. For the tired or worried mother it is a great blessing to be able to put the youngsters before TV and let them sit and sit while the muscles atrophy. The habit grows and the muscles become more and more flabby.

We are spending millions on *Preventive Medicine*; shots for this and shots for that, a vitamin here, and lecture there. All this is excellent, but flabby muscles are not developed into muscles with good tone by shots,

vitamins, and lectures. Muscles must be used and they must be used often if we expect to have good muscles and endurance.

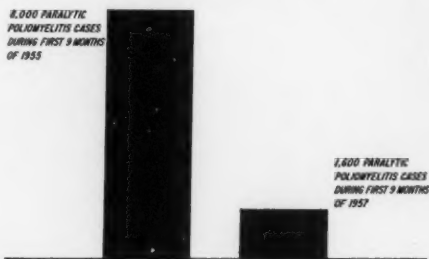
What has happened to the walking, the bicycling, the skating, yes, the setting-up exercises, the calisthenics in the schools. Those are things of the past. We do not even build sidewalks much anymore, that is in our residential areas. Why build sidewalks when people are not inclined to use them?

Well, this problem of physical fitness is not only for doctors but is one for parents, teachers, yes, every American. All must get interested and active in this program of Fitness of American Youth. No one committee is going to accomplish much unless everyone in America gets interested. Let us start with the physical fitness aspect now. The future of America depends on good bodies as well as good minds and good souls.

NOW—VACCINATE FOR POLIO—NOW

More than 35 million Americans under the age of 40 have not received polio vaccine; more than 40 million Americans have not completed the series of three doses of the vaccine.

INCIDENCE OF PARALYTIC POLIOMYELITIS



Around the World

(Ser. II, No. 15)

By

CLAUDIUS F. MAYER, M.D.

OSLO seems to be one of the European towns where coronary disease does not show its surge. In many other places of the world the *trend of coronary death* is upward. Thus, British physicians have found that, since 1943, many people have died from coronary disease in Great Britain. The reason for the high mortality is obscure. There is no proof that fat in the diet is the main cause. Before the first World War, ischemic heart disease was less common than now. A nation-wide survey by British pathologists showed an excess of ischemic myocardial fibrosis in those with light occupations who died from cancer, injuries, etc. A number of these cases represented solitary scars of large healed infarcts. Others have also observed that the trend in coronary mortality cannot be matched with the figures of *fat consumption*. Is it the fish diet which protects the people of Oslo? If so, then why is the coronary death rate twice as large in Aberdeen, another fish-eating town? Here is a problem where the help of the World Health Organization may bring us closer to the true solution.

A recent report of the British Medical Council was devoted to the study of the question whether x-ray irradiation of the spine in spondylosis for the treatment of stiffness (ankylosis) is justifiable on account of the danger of damage to the bone marrow, of leukemia, and aplastic anemia. Careful analysis of the records brought out a few unpleasant facts. It is true, asserts the report, that *more spondylitic irradiated persons will die from leukemia*. But nobody can tell what is the threshold dose for inducing the disease. It may be 30 r or 50 r. It does not matter, really, since there is no better way for treating the crippled spine. On the other hand, if it be true that there is no quantitative rela-

tionship between the incidence of leukemia and the dose of irradiation, as this recent hypothesis now states, natural background radiation alone may be responsible for the development of any leukemia. This natural background radiation is steadily increasing as a result of the wider and *wider usage of x-ray for diagnostic purposes*. Would we want to curb the use of roentgen rays in diagnostics on this account, as laymen in America and France have recently suggested?

A *unique botanical garden* opened in The Hague for the particular pleasure of the blind. The garden is planted with strong-scented flowers so that blind people can appreciate their perfume. The plants are in raised beds ready to be touched by their admirers. Labels are also provided printed in Braille characters.

During the *International Medico-Surgical Meetings* held in the hospitable city of Torino in the early part of June (1957), the Secretariat published a special newspaper in a morning and evening edition. It ran for about 14 issues. The large number of *portraits of the lecturing doctors* who congregated from all parts of the world makes this ephemeral publication a source and document of lasting value for medical history and iconography.

Leukemia is more often seen today than let's say 50 years ago. American studies in Brooklyn, N.Y., showed that foreign-born whites had a 61.0 per million death-rate from leukemia while the native born were dying from the same disease at the rate of 45.3 per million. It was also detected that 1.9 times as many Russian-born people died from leukemia as other foreign-born. Since practically all Russian-born people of Brooklyn are Jewish, a further examination was made concerning the *incidence of leukemia among*

Jews. It was discovered that almost $2\frac{1}{2}$ times as many Jewish males (and twice as many Jewish females) die from leukemia as non-Jewish. This seems to be an evidence of another serious disease where the Hebrew people have a higher incidence than other races.

During the past few years, neuropharmacology enjoyed an immense popularity in the United States, especially under the stimulus of the various drug-manufacturing firms. There were also several conferences held on the effect of the so-called "tranquilizers." One of such conferences, held in 1955, was under the sponsorship of the Josiah Macy, Jr. Foundation. It discussed the action of lysergic acid diethylamine (LSD) and its relation to schizophrenia. Another conference in the same year discussed chlorpromazine and reserpine, and introduced the new meprobamate (Miltown). It is interesting to note the *aversion* of the French doctors and of the French public to the use of tranquilizers. Would a Frenchman rather have his temperament? One is not so liable to the development of "tensions" as the Anglo-Saxon and the American who like to "swallow" their feelings.

One of the genetically most interesting substances of the human body is *hemoglobin*. Besides normal adult hemoglobin (Hb A) there are many variants known as S, C, D, E, G, H, and I. Seven of these forms (not H) are the products of allelic genes. The distribution of these genes depends upon many factors, including natural selection, anthropology and anthropogeography. *Hemoglobin S* (the sickle-cell Hb) is found in African Negroes between the Sahara Desert and the River Zambesi and their known descendants elsewhere, also in some people around the Mediterranean, and in the Veddas of India and Arabia. *Hemoglobin C* occurred in West Africa and in places where West Africans were taken as slaves. *Hemoglobin E* was first found in 1954 in India; it was also described in Siamese, in Veddas from Ceylon, and in Indonesia. Lately, it had been also observed in Burmese families, and in Eti-Turks in

Southern Turkey. Hemoglobin E may play the same role in blood diseases of Southeast Asia as sickle cell hemoglobin does in Africa.

The possession of a double dose of any of the genes of these hemoglobin types is associated with various diseases in human beings. Similar differences were recently detected in such animals as sheep and cattle. Thus, the *Algerian hill cattle* may have a Bov. A and a Bov. B *type of hemoglobin*. Such a discovery leads to certain genetic speculations concerning the ancestry of our present-day dairy animals. One wonders also whether the presence of one or the other hemoglobin may cause some illness in homozygous animals at some part of the world.

One of the most serious health problems in *Brazil* is the infestation of the rural and suburban population with the *Schistosoma mansoni*. A recent symposium, organized by the Naval Hospital of Salvador at Bahia, stated that at present there are about 4 million persons infested with the worm in Brazil. Fecal surveys of school children in Salinas (Minas Gerais) showed an alarming spread of schistosomiasis in the suburbs of this town. The three main factors in the epidemic propagation of *Schistosoma* are: (a) the presence of planorbid snails, (b) the presence of sick people who discharge the ova of the worms, and (c) people who use the polluted waters. The ideal molluscocide drug is still unknown. Sanitation of the environment and education of the people are the only effective approach to combat schistosomiasis.

Though the Jenner vaccination against smallpox had been introduced almost 150 years ago, many countries of the world are still affected by the disease. In *South American countries* the situation about smallpox has improved somewhat, especially since the establishment of regional units for the production of *dry anti-smallpox vaccine*. The dry vaccine is almost a "must" for all tropical countries where the means of communication are deficient. Adequate laboratories for the manufacture of dry smallpox vaccine have been opened in Argentina, Bolivia,

Chile, Ecuador, Cuba and Peru. The dry vaccine is prepared in the tissue of chick-embryos (egg culture). Wholesale vaccination against smallpox is now going on in all South American countries.

In the South American autumn of 1956, Argentina passed through a major epidemic of poliomyelitis. There were a total of 5,321 cases of paralytic poliomyelitis observed in the whole country, and Buenos Aires alone had to take care of 2,681 cases. The mortality of the epidemic was 11.9% (in the paralytic cases). Afterwards, the Medical Association of Argentina arranged conferences on poliomyelitis; these proceedings were issued in a triple number of the Association's Rivista. Among the many observations, our attention is attracted by the reports on the respiratory complications. Radiographic and postmortem studies point to the possibility that the so-called pulmonary complications are in fact regular manifestations of the infection, with settlement of the virus in the neurovegetative system of the lungs or perhaps in the lung itself. This may justify the assumption of a new clinical form of the disease, with "respiratory poliomyelitis."

In all parts of Soviet Russia, surgical cosmetics is a rather important discipline. Many people are treated for skin disease and for such blemishes as tattoo marks, scars, smallpox pits, birthmarks, and warts. The Central Institute for Surgical Cosmetics is in Moskva, but other clinics are functioning at Leningrad, Kiev, Kharkov, Baku, Sverdlovsk. A new research clinic for cosmetology has recently opened at Tashkent.

Semen Semenovich Girglov (1881-1957), Russian orthopedist of world-wide reputation, died in January this year. He was one of the old-type Russian military surgeons, a 1904 graduate of the Russian Military Medical Academy. At his death he was a lieutenant-general (Maj. Gen.) in the Russian Army.

Mongolia and Hungary's present red regime concluded a trade agreement under which the Mongol People's Republic will export to Hungary wool, fur, animal hair, untreated leather and other animal products while Hungary will export to Mongolia instruments for the boring of wells, drugs, all types of medical instruments, and other goods. One may wonder where the medical instruments had been originally manufactured. Or are they the first products of another "five-year" economical plan? Budapest is a city of rubble where, on one of the rubble heaps of shattered masonry and broken glass, someone—still sparkling with the humor of the condemned—erected a post topped with a hand-lettered cardboard which read: "The next five-year plan."

One of the most interesting studies of this year was just released by the London press. It is a "population study" of the New Zealand penguin (*Megadyptes antipodes*) which is living on Otago Island. This yellow-eyed species has a life expectancy of about 22 years during which time the individual birds have frequent opportunity to enter into companionship with members of the opposite sex. The naturalist who carried out the difficult ornithological research brought out the interesting observation that, even among the citizens of "Penguinia," younger birds easily dissolve their pair-bonds while about 63% of the older birds keep their pair-bonds intact, sometimes for 13 consecutive mating seasons. Some of the birds seek partners of great discrepancy of age, and some of them are unable to retain their mates because of "incompatibility," as the naturalist observed. This is just about as much as we know of the grounds of the instability of human marriages! . . . *Mutta paucis!*

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ASSOCIATION NOTES

Timely items of general interest are accepted for these columns. Deadline is 3rd of month preceding month of issue.

Department of Defense

Ass't Secretary (Health & Medical)—HON. FRANK B. BERRY, M.D.

Deputy Ass't Sec'y—HON. EDW. H. CUSHING, M.D.

SELECTIVE SERVICE

Selective Service calls for the Armed Forces have been reduced in the past few months. There will be a call for 7,000 men in November.

AVIATION PATHOLOGY

Captain William M. Silliphant, MC, USN, Director of the Armed Forces Institute of Pathology, recently said, "the field of aviation pathology itself is less than two years old," but "it is growing up."

For a long time airplane accidents have been investigated with the thought in mind of finding out what happened in the plane, but only recently has the spotlight been turned on what might have been wrong with the pilot. This is the field of aviation pathology.

Captain Silliphant emphasized that "on-the-spot" investigations of aircraft fatalities by the pathologist is a "must" to complete the investigation.

The Armed Forces Institute of Pathology has a section on aviation pathology. It has been appointed the central laboratory for aircraft accident investigations and acts as the repository for all such cases involving all members of the North Atlantic Treaty Organization.

Army

Surgeon General—MAJ. GEN. SILAS B. HAYS

Deputy Surg. Gen.—MAJ. GEN. JAMES P. COONEY

SGO ASSIGNMENTS

Lt. Col. James L. LaCombe, MSC, who has been Executive Officer at the Army hospital in Munich, Germany, has recently been assigned to the Personnel Division, Surgeon General's Office.

Lt. Col. Harold P. Larson, MSC, was recently assigned a Chief of the Directives and Policies Branch, Medical Plans and Operations Division, Office of the Surgeon General. Prior to this assignment he was in the Office of the Surgeon, U. S. Army, Europe.

HEADS RADIOLOGY SERVICE

Col. John A. Isherwood, MC, who has been Chief of the Radiology Service at Brooke Army Hospital, has been transferred to the Walter Reed Army Medical Center to fill a similar position.

Colonel Isherwood has been in the Army Medical Service since 1929, starting his service at Walter Reed Army Hospital.

As Professor of Radiology in the Baylor University Graduate School at Brooke Army Hospital, Colonel Isherwood has guided many of the hospital residents through their radiological studies toward the Master of Science degree. He has also been Chief of the X-ray Branch of the Department of Professional Sciences at the Army Medical Service School.

HONORED

Maj. Gen. Leonard D. Heaton, MC, U. S. Army, Commanding Officer of the Walter

Reed Army Medical Center, Washington, D.C., was recently honored when he was presented a medal and diploma of honorary membership in the Brazilian Academy of Military Medicine.

The presentation was made by Brig. Gen. Arthur Luiz Augusto Alacantara, Commanding General of the Central Hospital of the Brazilian Army at Rio de Janeiro, and Colo-



U. S. Army Photo

(L. to R.) BRIG. GEN. ALACANTARA, MAJ. GEN. HEATON, COL. DEMELLO

nel Paulino Demello, Director of the Polyclinica of the Army, Rio de Janeiro. These two officers were visitors at the Walter Reed Army Medical Center.

REORGANIZATION AMSS

The Army Medical Service School, Brooke Army Medical Center, Fort Sam Houston, Texas, has been reorganized by placing all activities under four divisions: Academic Division (under direction of Col. Laurence A. Potter, MC); the Administrative Support Division (temporarily headed by Lt. Col. Orne D. Smith, MSC); the Logistical Support Division (directed by Lt. Col. Clyde B. Kennington, MSC); and the Troops Division (headed by Col. Ray E. Stoltz, MSC). The Office of the Comptroller, under Major Fred F. Bentz, and the Faculty Board, composed of senior officers of the faculty, will be directly responsible to the Commandant, Brig. Gen. Elbert DeCoursey, Medical Corps.

Navy

Surgeon General—REAR ADMIRAL BARTHOLOMEW W. HOGAN

Deputy Surgeon General—REAR ADMIRAL BRUCE E. BRADLEY

BUMED ASSIGNMENTS

Captain James A. Addison, MC, has been appointed as Head, General Planning Branch of the Bureau of Medicine and Surgery. Prior to this assignment he was Division Surgeon with the Third Marine Division. He relieved Captain R. Penington, Jr., MC, who has been assigned as Navy Member of the Armed Services Medical Matériel Coordination Committee.

CHIEF OF MEDICINE

Captain John B. MacGregor, MC, USN, has assumed the duties of Chief of Medicine of the U. S. Naval Hospital, National Naval Medical Center, Bethesda, Maryland. He relieved Captain Ralph C. Parker, Jr., who retired.

Captain MacGregor is a graduate of the University of Virginia Medical School. He was commissioned in the Navy Medical Corps in 1939. During World War II he served aboard the ships USS *Albe Marle* and USS *Yukon*, and participated in the evacuation of the wounded from Iwo Jima.

RETIRED

Captain James L. Purcell, DC, retired on October 1 after more than thirty years of service in the Navy Dental Corps. His last assignment was Commanding Officer, U. S. Naval Dental Clinic, Naval Base, Philadelphia, Pa.

Air Force

Surgeon General—MAJ. GEN. DAN C. OGLE
Deputy Surg. Gen.—MAJ. GEN. OLIN F. MCILNAY

HEADS VETERINARY SERVICES

Colonel Robert R. Miller, USAF (VC), has assumed the duties as Assistant for Vet-

erinary Services to the Air Force Surgeon General. He succeeds Brig. General Wayne O. Kester who has retired.

CHIEF—MEDICAL SCIENCES

Dr. Roland B. Mitchell has been appointed Chief of Medical Sciences at the Air Force School of Aviation Medicine, Randolph Air Force Base, Texas. He joined the School in 1948 as Head of the Department of Microbiology.

Dr. Mitchell, a Fellow of the American Academy of Microbiology, is noted for his development of faster methods for finding the effective antibiotic that will combat infectious diseases. He received Honorable Mention in 1954 in the Sir Henry Wellcome Medal and Prize competition. His essay, "Rapid Microbiologic Methodology in Military Medicine" appeared in the February 1955 issue of *MILITARY MEDICINE* (Vol. 116: 85).

SPACE MEDICINE

Lt. Col. George R. Steinkamp, USAF (MC), has succeeded Dr. Hubertus Strughold, a world renowned space scientist, at the

School of Aviation Medicine, Randolph Air Force Base, Texas.

Colonel Steinkamp, a native of Little Rock, Arkansas, and a graduate of the University of Arkansas, entered the Air Force as a medical officer in 1942. He was sent to Africa where he joined the Ninth Air Force in Egypt. He was squadron surgeon with the Ninth Air Defense Command in Europe for the last three years of World War II.

After four years in private practice in Little Rock, Colonel Steinkamp was recalled to service in 1950 during the Korean Conflict. He was sent to the Air Force Survival School in Colorado where he taught flyers survival methods if forced down in the desert or on frozen Arctic tundra. Later he was sent to Greenland.

When Dr. Strughold's successor was to be named, Colonel Steinkamp was chosen. In this new position he will have plenty of opportunity to use his imagination as to what might happen to a passenger in outer space. There are many problems to be solved for his survival if a suitable vehicle can be provided for his travel.

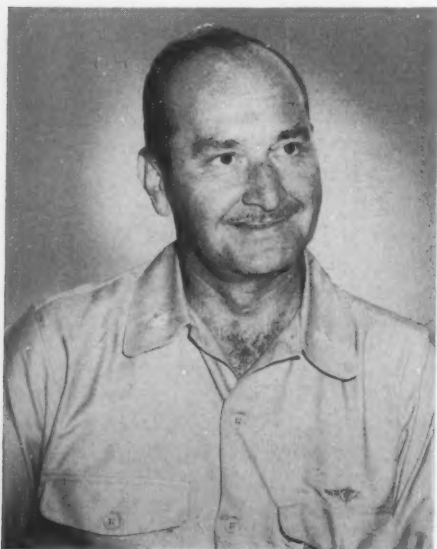
Public Health Service

Surgeon General—LEROY E. BURNES, M.D.
Deputy Surg. Gen.—JOHN D. PORTERFIELD, M.D.

DEPUTY SURGEON GENERAL

Dr. John D. Porterfield has been appointed Deputy Surgeon General of the Public Health Service, effective September 30. He has been an Assistant Surgeon General and is a career officer of the Service.

Dr. Porterfield is a native of Chicago, a graduate of the University of Notre Dame, and received his medical degree from Rush Medical College of the University of Chicago. He received his master's degree in public health from The Johns Hopkins University School of Hygiene and Public Health. He has been on the faculties of the Ohio State University College of Medicine, the University of Michigan School of Public



U. S. Air Force Photo

LT. COL. GEORGE R. STEINKAMP, USAF (MC)

Health, and the Cincinnati College of Medicine.

NEW ASSIGNMENT

Dr. W. Palmer Dearing who has been Deputy Surgeon General of the Public Health Service for the past nine years has assumed his new position in the Office of Defense Mobilization. With his assignment a new section of that office has been created for health and medical affairs.

Dr. Dearing became the first Assistant Director for Health in the Office of Defense Mobilization on September 27. In this new position he will be responsible to Director Gordon Gray.

INFLUENZA VACCINE COMMITTEE

A Committee on Influenza Vaccine which is to act in an advisory capacity to the Division of Biologics Standards of the Public Health Service's National Institutes of Health, Bethesda, Maryland, was appointed and consists of the following members: Dr. Fred Davenport, Univ. of Michigan; Dr. Dorland Davis, Nat. Inst. of Health, USPHS, Bethesda, Md.; Dr. Alto Feller, Univ. of Virginia; Dr. Thomas Francis, Univ. of Michigan; Col. H. E. Griffin, U. S. Army; Dr. Maurice Hilleman, Walter Reed Army Med. Center; Dr. George Hirst, Public Health Research Inst.; Dr. Keith Jensen, Bur. of State Serv., USPHS; Dr. Gordon Meiklejohn, Univ. of Colorado Med. Center; Dr. Roderick Murray, Nat. Inst. of Health, USPHS; Capt. John Seal, U. S. Navy; Dr. Jos. Smadel, Nat. Inst. of Health; Dr. William Stewart, Off. Surg. Gen., USPHS.

This Committee recommended the use of 1.0 cc. of the Asian type of influenza vaccine to be given subcutaneously rather than 0.1 cc. of the vaccine given intracutaneously. The use of two 0.1 cc. intracutaneous doses, separated by at least one week in children under the age of five, as recommended by the American Academy of Pediatrics, was recognized by the Committee as an acceptable procedure.

One point should be emphasized and that

is that the use of the vaccine does not guarantee immunity to the Asian type of influenza in all persons. The vaccine has been recommended by the Public Health Service as a means of reducing the amount of Asian type of influenza which is expected in this country this next six months. No one can predict with certainty the severity or the extent of the number of Asian influenza cases. If the vaccine can hold an epidemic in check it is well worth the effort in giving it. We shall, of course, know more about all this next spring.

A word of caution is given in the administration of the vaccine to persons who are allergic to eggs. This point has been emphasized in all the literature that has come out.

NEUROLOGICAL RESEARCH TRAINING

A new program of financial support for advanced training of research scientists in the field of neurological and sensory disorders was recently announced by the Public Health Service.

The program is designed to help research scientists obtain additional specialized training for careers in teaching or research.

Further information may be obtained by writing to the Chief, Extramural Programs Branch, National Institutes of Neurological Diseases and Blindness, National Institutes of Health, Bethesda 14, Md.

APPOINTMENT NIH

Dr. Richard L. Masland, a neurologist and psychiatrist, has been appointed as assistant Director of the National Institute of Neurological Diseases and Blindness, a division of the National Institutes of Health, Bethesda, Maryland.

Prior to his new appointment, he was professor of neurology and psychiatry and head of the neurology program at the Bowman Gray School of Medicine, Winston-Salem, N.C. He served with the U. S. Army Medical Service from 1942 to 1945. In 1947 he joined the Bowman Gray School of Medicine.

Dr. Masland has many scientific publications to his credit, among them articles deal-

ing with epileptic seizures, the impact of drug therapy on neuromuscular disease, the effect of anoxia on the central nervous system, the nature of various diseases of the voluntary muscles, and respiratory paralysis resulting from poliomyelitis.

RETIRED

The following commissioned officers of the Public Health Service have been retired: Carl L. Jones (Senior Pharmacist); Benjamin L. Newell (Senior Surgeon); George L. Cristy (Senior Surgeon); Waldo B. Edwards (Senior Surgeon); F. Ruth Fahe Nurse Director; Hollis U. Maness (Medical Director); William W. Smith (Scientist).

POLIOMYELITIS

For the first 41 weeks of 1957 there were 5,231 cases of poliomyelitis reported in the United States; for the corresponding number of weeks in 1956 there were 13,148 cases reported. Of this number there were 1,767 paralytic cases in the same period for 1957, and 5,636 for 1956.

HEPATITIS

Cases of hepatitis, infectious and serum, numbered 12,393 for the first 41 weeks of 1957 as against 15,720 for the same period of 1956.

NEW PAMPHLET

Cerebral Vascular Disease and Strokes, PHS No. 513, is a new pamphlet which will be of interest to patients and their families. A free copy may be obtained from the Heart Information Center, National Heart Institute, Bethesda 14, Maryland.

Veterans Administration

Chief Medical Director—WILLIAM S. MIDLETON, M.D.

Deputy Chief Med. Dir.—R. A. WOLFORD, M.D.

HEADS ATOMIC MEDICINE PROGRAM

Dr. W. Edward Chamberlain, professor emeritus of radiology at Temple University

Medical School and president of the American Roentgen Ray Society, has been designated as special assistant for atomic medicine to the Chief Medical Director.

During World War I Dr. Chamberlain served in the U. S. Navy.

CENTRAL OFFICE ASSIGNMENTS

Dr. Thomas L. Auth has been appointed Chief of the Neurology Division at the Veterans Administration Central Office in Washington. He succeeds Dr. Benedict Nagler who has left the VA to become superintendent of the Lynchburg Training School and Hospital at Coloney, Va.

Dr. Auth is certified in neurology by the American Board of Psychiatry and Neurology and is on the teaching staff of Georgetown University School of Medicine.

Dr. Frank J. Schaffer has moved from an assignment in Memphis, Tenn., to Washington as Chief of Program Development in the Physical Medicine and Rehabilitation Service of the central office. He succeeds Dr. Frederick J. Balsam. Dr. Schaffer is certified by the American Board of Physical Medicine and Rehabilitation.

HOSPITAL MANAGER

Dr. Thomas E. Dredge has been appointed as manager of the VA hospital at Tomah, Wis. He has been director of the professional services at the VA hospital in St. Cloud, Minn., since April 1954.

Dr. Benjamin F. Jackson has been transferred from Tomah, Wis., to be manager of the VA hospital at Bedford, Mass. He has been connected with the Veterans Administration since October 1930 at which time he was assigned to Ft. Lyon, Colo.

Dr. Albert L. Olsen who was formerly director of professional services at the VA hospital in Battle Creek, Mich., has been appointed as manager of the VA hospital in Knoxville, Iowa. During World War II he served with the Army Medical Service.

Dr. Henry L. Vogl formerly of the VA center in Wood, Wis., has been appointed as manager of the VA hospital in Minneapolis,

Minn., where he replaced Dr. John A. Seaberg who retired.

TESTING FRACTURE HEALING

At Hines Veterans Administration Hospital in Illinois they are testing the healing of fractures by using ultrasonic waves.

Preliminary studies have shown that this technique offers an objective and accurate method of analyzing the degree of healing.

The device used in the technique is essentially a low energy, ultrasonic transmitter which sends its waves down the extremity of the patient. A receiver at the opposite end of the extremity records the length of time that it has taken for the impulse to go down the extremity. The change, or variation in the time, is an indication of the degree of fracture healing.

This method analyzes the degree of healing of a fracture by the measurement of sound velocity across a fracture site compared to that of the opposite normal extremity.

Those responsible for the development of the project are: George T. Anast, M.D., Irwin M. Siegel, M.D., and Theodore Fields, M.S.

Miscellaneous

PENICILLIN REACTIONS

Dr. Henry Welch, Chief of the Food and Drug Administration's Division of Antibiotics recently stated at the Fifth Annual Symposium on Antibiotics, held in Washington, D.C., that the number of serious reactions to penicillin has been increasing each year.

He pointed out that an estimated 10 percent of the population are prone to become sensitive in some degree to various substances in foods, drugs, and cosmetics. It is not possible, Dr. Welch said, to determine absolutely that an individual will or will not suffer a reaction.

In the survey by FDA from 1953 to 1957 there were 72 deaths from anaphylactoid shock, all but one of which followed intramuscular injections.

PENICILLINASE

In the August issue of *MILITARY MEDICINE* we reported the use of penicillinase to overcome the reactions to penicillin. We now learn that this penicillinase will be made available to the medical profession before the end of the year under the registered trade mark, "Neutrapen."

ADENOVIRUS VACCINE

Production of the Adenovirus Vaccine for commercial use will soon be under way. Approval has been given by the National Institutes of Health to Parke-Davis Company for the production of the vaccine.

The vaccine is prepared from three types of adenoviruses (sero-types 3, 4, and 7). These viruses have also been known as adenoidal-pharyngeal-conjunctival viruses. Clinical investigation was made in 1955 at the Great Lakes Naval Training Station using 5,000 Navy recruits. It was found that the vaccine was effective in reducing the incidence of respiratory disease.

The vaccine does not prevent a common cold.

EDUCATIONAL TV

Under the sponsorship of the Schering Corporation an educational TV program known as "World of Medicine" started over educational TV stations (special channels).

The 13 films will later be made available to medical, lay educational and civic groups for showing.

HEARTBEAT RESTORER

A simple electronic instrument which restores normal heartbeat in cases of cardiac arrest has been designed by the Air Force's Aero Medical Laboratory.

The device is said to do away with the necessity of thoracotomy and manual heart massage. It is described as a simple, compact, safe, and reliable instrument.

This is described in illustrated volume, PB 121888, *A Practical External Cardiac Pacemaker-Defibrillator*. Order from OTS,

Dept. of Commerce, Washington 25, D.C.
Price 75¢ per copy.

PRIMER AVAILABLE

A Primer for Paraplegics and Quadriplegics is available from The Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, 400 East 34th St., New York 16, New York. Price is 50¢ per copy.

VAN METER PRIZE AWARD

The American Goiter Association offers the Van Meter Prize Award of \$300 and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland.

Further information may be obtained by writing to Dr. John C. McClintock, 149½ Washington Ave., Albany 10, N.Y.

POSTGRADUATE COURSE

"Recent Advances in the Diagnosis and Treatment of Poisonings" is the title of a full-time course, being offered by the New York University-Bellevue Medical Center, December 2 through 4.

NEW MEDICAL JOURNAL

Arthritis and Rheumatism is to be the Official Journal of the American Rheumatism Association. This bimonthly journal will start with the January-February 1958 issue and will be published by Grune & Stratton, Inc., New York. The editor is William S. Clark, M.D.

LIFE EXPECTANCY

Life expectancy depends less on the star you were born under than the color of the traffic light when you cross the street.

ANON

INCOME

Live beyond your income and you will age before your time. According to studies made by three universities, people who have learned to live within their means live longer, retain mental and physical alertness for a longer time than those who habitually spend more than they earn.—*Property*, syndicated by Cambridge Associations, Boston.

CULTURE

Nowadays when the word "culture" crops into the conversation, it's apt to mean something growing under a microscope in a laboratory. BETTY BEALE, *Detroit Free Press*.

Honor Roll

Since the publication of our last list, the following sponsored one or more applicants for membership in the Association:

Capt. Leon A. Bowden, MSC, III, NG
Col. Warner F. Bowers, MC, USA
Brig. Gen. Victor A. Byrnes, USAF (MC)
Major Thutchai Dhirathumrong
Col. Phillip G. Fleetwood, USAF (MSC)
Col. Paul R. Hildebrand, MC, Colo. NG
Capt. H. C. Hunley, MC, USN
Col. Francis N. Kimball, USAF (MC), Ret.
Col. Amos R. Koontz, MC, Md. NG
Karl H. Korthueuer, M.D.
Major Rose M. Kudlitz, ANC
Med. Dir. Paul Lindquist, USPHS
Brig. Gen. Raymond A. Lynch, MC, Del. NG
Capt. Arthur Marks, DC, AUS
Col. Charles S. Mudgett, MC, USA
Lt. Col. Edwin J. Pulaski, MC, USA
Dr. John Reddy
Dr. Leonard A. Scheele
Brig. Gen. Harold G. Scheie, MC, USAR
Dr. John Stockton
Med. Dir. Paul E. Walker, USPHS



AWARDS

Presented at Honors Night Dinner, 64th Annual Convention,
Hotel Statler, Washington, D.C., October 30, 1957

WELLCOME AWARD

The Sir Henry Wellcome Medal and Prize is awarded annually through the Association of Military Surgeons of the United States by the Trustees of the Wellcome Foundation in London for the best essay on a military medical subject. The award consists of a Silver Medal, a scroll, and an honorarium of \$500. The winner of the 1957 award is Captain William W. Ayres, Medical Corps, U. S. Navy, Assistant Chief of Neuropathology, Armed Forces Institute of Pathology, Washington, D.C. The title of his winning essay is "Ependyoma of the Cauda Equina: A Report of the Clinicopathologic Aspects and Follow-up Studies of Eighteen Cases." This essay will be published in the January 1958 issue of *MILITARY MEDICINE*.

Captain Ayres is a native of Tulsa, Okla-



CAPT. WILLIAM W. AYRES, MC, USN

homa. He received his medical degree from Louisiana State University School of Medicine in 1938, and entered the Medical Corps of the U. S. Navy that year. During World War II he served with the Fifth Marine



COL. BENNIE A. MOXNESS, USAF (MC)

Division, and during the Korea Conflict he served with the First Marine Division. His interest in medicine lies in the field of pathology and he became a Diplomate, American Board of Pathology in 1949.

Captain Ayres is author of numerous scientific publications and did much work on the *Color Atlas of Pathology*, Vol. I and II, published by J. B. Lippincott and Company.

HONORABLE MENTION in the contest for the Sir Henry Wellcome Medal and Prize was given to Colonel Bennie A. Moxness, U. S. Air Force Medical Corps, on duty in the Office of the Surgeon General,

U. S. Air Force, Washington, D.C. His essay is entitled "Recent Trends in Prevention and Care of Casualties of War." This will be published in the February 1958 issue of *MILITARY MEDICINE*.

THE GORGAS MEDAL

The Gorgas Medal is awarded for distinguished work in preventive medicine for our Armed Forces. The award was estab-



COL. JOHN P. STAPP, USAF (MC)

lished by Wyeth Laboratories of Philadelphia in memory of Major General William Crawford Gorgas whose work in preventive medicine had made possible the construction of the Panama Canal. This award consists of a Silver Medal, a scroll, and a honorarium of \$500.

The winner of the 1957 Gorgas Medal is Colonel John P. Stapp, U. S. Air Force Medical Corps, Chief of the Aero Medical Field Laboratory, Holloman Air Force Base, New Mexico. He has made outstanding contributions in the field of trauma through deceleration. In his studies he served as the subject and on many occasions risked his life and physical well-being.

Colonel Stapp was born in Brazil of missionary parents and came to the United

States in 1922 for his education. He has been awarded a number of degrees: B.A. and M.A. (Baylor University); Ph.D. (University of Texas); M.D. (Minnesota University School of Medicine). He was called to active service in 1944.

THE MAJOR LOUIS LIVINGSTON SEAMAN PRIZE

This prize is made possible through funds left for that purpose with the Association of Military Surgeons of the United States by Major Louis Livingston Seaman, Surgeon of the First U. S. Volunteers. The prize is given for some notable article published in *MILITARY MEDICINE* during the year, and consists of a scroll and an honorarium of \$160.

The winner of the 1957 prize is Miss Ruth Addams, Deputy Director, Nursing Service, Department of Medicine and Surgery, Veterans Administration, Washington, D.C. Her article, "The Care of Long Term Illness Patients on Intermediate Bed Services" appeared in the November 1956 issue of *MILITARY MEDICINE*.

Miss Addams is a graduate of the Presby-



Bradford Bachrach

MISS RUTH ADDAMS

terian Hospital School of Nursing, Philadelphia, Pa., and has done considerable post-graduate work in Public Health and Administrative Nursing.

THE STITT AWARD

This award is given to the member of the Association of Military Surgeons who has done some outstanding work in the field of antibiotics. The award was established in 1954 through the courtesy of Pfizer Laboratories, Division of Charles Pfizer and Company, Inc., Brooklyn, New York, and consists of life membership in the Association of Military Surgeons, a bronze plaque, and an honorarium of \$500.

The 1957 award winner is Brigadier General Carl W. Tempel, Medical Corps, U. S. Army, Commanding Officer of the U. S. Army Valley Forge Hospital, Phoenixville, Pa.

General Tempel is a native of Missouri, and received his medical degree from the St. Louis University Medical School in 1929. He entered the Army Medical Service the same year. He has become known internationally as an authority on tuberculosis. He pioneered in the use of antibiotics for tuberculosis and has contributed many articles to

the literature. He spent many years at Fitzsimons Army Hospital where a large number of tuberculosis cases are treated. Prior to his present assignment General Tempel was in the Far East where he was able to give first hand help in the problem of tuberculosis which is one of the most important diseases in the native population. His Army position was that of Medical Consultant to the Army Forces in the Far East but he found time to give advice to the government medical services of those countries.

THE McLESTER AWARD

This award was established in 1954 by the J. B. Roerig Company Division, Charles Pfizer and Company, Inc., Brooklyn, New



Bradford Bachrach

DIETITIAN DIRECTOR EDITH A. JONES, USPHS

York, to honor the memory of Colonel James Somerville McLester, MC, USAR, Birmingham, Alabama. The award is presented to the person who is, or has been, at any time a commissioned officer, or of relative status, in the Federal Medical Services, and who has done outstanding work in the field of Nutrition and Dietetics. The award consists of a bronze plaque and an honorarium of \$500.

The winner of the 1957 Award is Miss Edith A. Jones, Dietitian Director, U. S. Public Health Service. She is Chief of the



U. S. Army Photo

BRIG. GEN. CARL W. TEMPEL, MC, USA

Nutrition Department, Clinical Center, National Institutes of Health, Bethesda, Maryland.

Miss Jones is a native of Alabama. She is a graduate of the University of Alabama and has done postgraduate work at the University of Tennessee and The Johns Hopkins University. During World War II she served with the U. S. Army in both the American and European Theaters of Operation. She has contributed many articles to the literature on the subject of Food Service.

THE FOUNDERS MEDAL

The Founders Medal is awarded by the Executive Council of the Association of

Military Surgeons of the United States to members of the Association for meritorious service in the field of military medicine and for some notable work done for the Association.

The recipients of this medal and the scroll which accompanies the medal for 1957 are:

Major General Paul I. Robinson, Medical Corps, U. S. Army, Office of the Surgeon General, Department of the Army. He was General Chairman of the 64th Annual Convention of our Association.

Colonel Robert C. Kimberly, Medical Corps, Maryland National Guard. He was Scientific Program Chairman of the 64th Annual Convention of our Association.



Army Photo

MAJ. GEN. PAUL I. ROBINSON, MC, USA



COL. ROBERT C. KIMBERLY, MC, NG, MD.



OBITUARIES

Our Oldest Member Dr. Rudolph Matas 1860-1957

Dr. Rudolph Matas, internationally known surgeon, died in New Orleans, La., on September 23 at the age of 97.

Dr. Matas was born in Bonnet Carre near New Orleans on September 12, 1860. Prior to his entering Tulane University for his medical education, he studied in France, Spain, and Mexico. In 1880, he received his medical degree from the Tulane University School of Medicine, New Orleans and then entered on an internship at Charity Hospital, New Orleans. He later specialized in surgery and was a pioneer in the field of vascular surgery. He was professor of surgery at Tulane University School of Medicine from 1895 to 1927, and emeritus professor since that date.

The honors and degrees bestowed upon this great physician are too numerous to list in this section of our journal. He was recognized by governments and medical societies around the world.

Dr. Matas was the oldest member of the Association of Military Surgeons of the United States; his membership dates back to 1897, six years after the organization was founded by Dr. Nicholas Senn, its first president.

Dr. Matas leaves behind him a record of immeasurable service to mankind.

Cdr. Jeremiah V. Crews, U. S. Navy, Ret.

Jeremiah Valentine Crews, Commander Medical Service Corps, U. S. Navy, Retired, died at the Naval Hospital, Camp Pendleton, Calif., on August 2, at the age of 51.

Commander Crews was a native of Tennessee. He entered the naval medical service in 1923 as an enlisted man and later was appointed to officer grade. Prior to the United States' entry in World War II, Commander Crews was on duty with the Regimental Hospital, Fourth Marines, in Shanghai, China. In November 1941 he was evacuated with the Fourth Marines to the Philippine Islands where he was taken prisoner by the Japanese Forces. In December 1944, Commander Crews was one of the 1619 persons who sailed from Manila for Japan on the ill fated prison ship *SS Oryoku Maru*. This vessel was bombed by allied airmen and sunk in Subic Bay. Survivors were transferred to a Japanese animal freighter at Linguayen which was later sunk in the harbor at Takao, Formosa. Survivors boarded a third ship for the remainder of the trip to Japan. Of the 1619 prisoners of war who sailed from Manila on the *Oryoku Maru* only 497 reached Japan alive. Commander Crews was repatriated on September 15, 1945. He served in the Medical Service Corps of the Navy until March 1, 1953 when he was retired for physical disability.

Commander Crews is survived by his wife and two children.

Col. Sanford W. French, U. S. Army, Ret.

Sanford W. French, Colonel, Medical Corps, U. S. Army, Retired, died at Brooke Army Hospital, Fort Sam Houston, Texas, on August 21 at the age of 75.

He was a native of Rochester, New York. After a period of service in the Medical Department of the Navy he went to medical school and graduated from George Washington University Medical School in 1909. He entered on active duty in the Army Medical Corps in 1910 and was retired December 31, 1944.

Colonel French opened the first Allergy Clinic in the Army in 1926. A report of this work was made in *The Military Surgeon* (Vol. 71, pg. 67-1932). He had contributed a number of other articles to that journal.

Colonel French is survived by his wife, Mrs. Agnes E. French who resides at 218 Encino Ave., San Antonio, Texas; and a son, Colonel Sanford W. French, 3d, MC, U. S. Army, on duty at Letterman Army Hospital.

Col. Merrill Moore, MC, USAR

Merrill Moore, Colonel, Medical Corps, U. S. Army, Reserve, died at Squantum, Boston, Mass., on September 20 at the age of 54. Death was due to cancer.

Dr. Moore was a native of Columbia, Tenn. He received his medical degree from Vanderbilt University School of Medicine in 1928. He practiced in the field of neurology and psychiatry and taught in these subjects at Harvard University School of Medicine. During World War II, he served in the Army Medical Corps in the Southwest Pacific. After the War he was stationed in China at the Nanking Headquarters Command. Later Dr. Moore resumed his practice in Boston where he was practicing until a few days before his death.

Dr. Moore published several books of sonnets. He contributed numerous articles on alcoholism to medical literature.

He is survived by his wife and children who live at Squantum, Boston, Mass.

Col. David A. Myers, U. S. Army, Ret.

David Ap Myers, Colonel, Medical Corps, U. S. Army, Retired, died at Letterman Army Hospital, September 26 at the age of 82.

Colonel Myers was a native of Wisconsin, was a graduate of McGill University Medical School (1898) and practiced in Oklahoma for nineteen years. He served as president of the Oklahoma State Medical Association during this time.

He entered the military service in 1918 and was assigned to the Aviation Section of the U. S. Army Signal Corps as a medical officers. In 1919 he graduated from the first school for flight surgeons and became the chief surgeon for the Aviation Section under General Henry H. Arnold.

At Crissy Field, in 1926, Col. Myers and Lt. Col. William C. Ecker made the first systematic discoveries in the science of blind flight. The two officers invented the bank-and-turn indicator. He published many scientific papers on the physiology of flying. He was awarded the Legion of Merit for his research and achievements.

In 1940, Colonel Myers retired from the military service, but was recalled almost immediately and continued until 1946 when he was retired permanently. He served as surgeon of the First Military Area and later as chief surgeon at the Presidio during this six year period.

He is survived by his wife who lives at 125 Cambon Drive, San Francisco 25, Calif., and by a daughter, Mrs. Robert L. Sparks of Chesterfield, Mo.



NEW BOOKS

Books may be ordered through the Association.

- The Sea War in Korea*, by Cdr. Malcolm W. Cagle, USN, and Cdr. Frank A. Manson, USN. U. S. Naval Institute, Annapolis, Md. Price \$6.00.
- Clinical Orthopaedics, Vol 9*, edited by Anthony F. DePalma. J. B. Lippincott Co., Philadelphia, Pa. Price Single copy \$7.50. Sustaining \$6.00.
- Progress in Gynecology, Vol. III*, by Joe V. Meigs, M.D. and Somers H. Sturgis, M.D. Grune & Stratton, Inc., New York, N.Y. Price \$15.50.
- Annual Epidemiological and Vital Statistics, 1954*. World Health Organization, Geneva, Switzerland. Price \$10.00.
- Implant Dentures*, by Aaron Gershkoff, B.S., D.D.S., and Norman I. Goldberg, D.D.S. J. B. Lippincott Company, Philadelphia, Pa. Price \$12.00.
- One Surgeon's Practice*, by Frederick Christopher, M.D., W. B. Saunders Co., Philadelphia, London. Price \$4.00.
- Current Surgical Management*, Editors: John H. Mulholland, M.D. Editor-in-Chief New York University College of Medicine; Edwin H. Ellison, M.D., Ohio State University College of Medicine; Stanley R. Friesen, M.D., University of Kansas Medical Center, with contributions by 76 American Authorities, W. B. Saunders Co. Philadelphia—London. Price \$10.00.
- Biology of the Treponematoses*, by T. B. Turner & D. H. Hollander, World Health Organization, —Columbia University Press, New York. Price CLOTH \$6.00.
- The Teaching of Hygiene and Public Health in Europe*, by F. Grundy and J. M. MacKintosh; WHO, Columbia University Press, New York. Price: CLOTH, \$5.00.
- Rheumatoid Arthritis*, by Charles L. Short, M.D., Walter Bauer, M.D., William E. Reynolds, M.D., Harvard University Press, Cambridge, Mass. Price \$7.00.
- Medical Writing*, by Morris Fishbein, M.D., McGraw-Hill Book Co., Inc., N.Y. Price \$7.00.
- Handbook of Orthopaedic Surgery*, 5th Edition, by Alfred Rives Shands, Jr., B.A., M.D., The C. V. Mosby Co., St. Louis, Mo.
- It Pays to be Healthy*, by Robert Collier Page, M.D., Prentice-Hall, Inc., New York, N.Y. Price \$4.95.
- Modern Perinatal Care*, by Leslie V. Dill, M.D., F.A.C.S. Appleton-Century-Crofts, Inc. New York, N.Y. Price \$6.50.
- Zinsser's Bacteriology, 11th ed.* By David T. Smith, M.D., Norman F. Conant, Ph.D. Appleton-Century-Crofts, Inc. New York, N.Y. Price \$12.00.
- Methods of Group Psychotherapy*, by Raymond J. Corsini, Ph.D. McGraw-Hill Book Company, Inc. New York, N.Y. Price \$6.50.
- Orthodontics—Principles and Prevention—\$13.00; Orthodontics—Practice and Technics—\$20.00* (Books available together in special slipcase—\$33.00) J. B. Lippincott Co., Philadelphia, Pa.
- Craig and Faust's Clinical Parasitology*, by Ernest Carroll Faust, A.B., M.A., Ph.D., and Paul Farr Russell, M.D., M.P.H. Lea & Febiger, Philadelphia, Pa. Price \$15.00.
- Animals Parasitic in Man*, by Geoffrey Lape. Penguin Books, Inc., Baltimore, Md. Price \$95.
- Operative Obstetrics*, by R. Gordon Douglas, and William B. Stromme. Appleton-Century-Crofts, Inc., New York, N.Y. Price \$20.00.
- Atlas of Technics in Surgery*, by John L. Madden, M.D., F.A.C.S. Appleton-Century-Crofts, Inc., New York, N.Y. Tentative Price, \$20.00.
- The Malabsorption Syndrome*, edited by David Adlersberg, M.D. Grune & Stratton, New York, N.Y. Price \$5.50.
- The Century of the Surgeon*, by Jurgen Thorwald. Pantheon Books, New York, N.Y. Price \$5.95.
- The Mathematical Theory of Epidemics*, by Norman T. J. Bailey, M.A. Hafner Publishing Co., Inc., New York, N.Y. Price \$6.75.
- Biological Aspects of the Transmission of Disease*, edited by C. Horton-Smith. Hafner Publishing Co., Inc., New York, N.Y. Price \$4.00.
- The Biology of Ageing*, edited by W. B. Yapp and G. H. Bourne. Hafner Publishing Co., Inc., New York, N.Y. Price \$4.25.
- Quantitative Pharmaceutical Chemistry*, by Glenn L. Jenkins, Ph.D., John E. Christian, Ph.D., and George P. Hager, Ph.D. McGraw-Hill Book Co., Inc., New York, N.Y. Price \$8.50.
- Headache, Diagnosis and Treatment, 2d ed.*, by Robert E. Ryan, B.S., M.D., M.S., F.A.C.S., The C. V. Mosby Co., St. Louis, Mo. Price \$6.75.

BOOK REVIEWS

THE TREATMENT OF BURNS. By Curtis P. Artz, M.D., F.A.C.S., Lt. Col. USA, Ret., Associate Professor of Surgery, University of Mississippi Medical Center; and Eric Reiss, M.D., Instructor in Medicine, Washington University School of Medicine. 250 pages, with 199 illustrations. W. B. Saunders Company, Philadelphia and London. 1957. Price \$7.50.

This book represents the experience of the Surgical Research Unit of Brooke Army Medical Center since 1949. It is a concise and common sense presentation of data from which specific recommendations for early management and late care have evolved. The Rule of Nines and the formula for estimation of fluid requirements have been well publicized and are fairly widely accepted. The results point up the fact that we now can carry burned patients through the fluid loss shock stage but the overall case fatality rate has not been appreciably improved because the patients who formerly died of shock now survive to die later of infection uncontrollable by the highly over-rated antibiotics. The book presents all aspects of the burn problem in some detail and enumerates the areas in which further investigation is needed. Various technical maneuvers are described and illustrated in detail, complications are discussed, and suggestions are made for management of burns in the event of mass disaster. The details of the exposure method are presented with data on the protective dressing method and their respective contraindications. This is a well-written and practical book.

COL. WARNER F. BOWERS, MC, USA

DERMATOLOGY. By Donald M. Pillsbury, M.A., D.Sc., M.D.; Walter B. Shelley, M.D., Ph.D.; and Albert M. Kligman, M.D., Ph.D. 1,331 pages, 564 figures. W. B. Saunders Company, Philadelphia and London. 1956. Price \$20.00.

As though intended to set the tone for the contents, the preface of this newcomer to the dermatologic library contains a statement of purpose which is well worth reading. It outlines the basic credo which pervades the entire work, namely, to root out ancient error, and thus prevent its further transmission; and lists also the objectives by which the authors hope to make of this volume an active assistant of the physician who has had "little or no experience with skin diseases and whose preclinical training has not included any acquaintance with the fundamental aspects of skin physiology." The present review, based on actual

use of the text for one month in office practice, will give my impression as to how effectively the authors have succeeded in their expressed aim.

The book begins with a section on the normal functions of the skin which may well serve as a model of clarity and balance in medical writing. In a series of thirteen brief chapters the difficult subjects of anatomy and physiology are presented in an original and stimulating manner. A brief résumé at the end of each chapter should prove valuable for review purposes. In the second section the reader is led skillfully through the notoriously confusing maze of dermatologic allergy.

The methodical approach to the all important matter of the correct diagnosis, and the thoroughness with which this often puzzling subject is covered gives evidence of the determination of the collaborators to make this work truly useful to the non-specialist. We may mention here the carefully selected black and white photographs of uniform excellence; the diagrams which show typical distributions of many dermatoses; and the use of ingenious schemata to fix in the mind easily forgotten factors concerned in the causation of various disorders.

Treatment is discussed from a viewpoint which though practical is entirely free from dogmatism. The authors recognize the effectiveness of several methods of treatment in certain conditions, but always mention their own preference. Prevention is stressed wherever this is a factor. Throughout the book one senses the importance placed on the influence of psychosomatic factors in the causation or aggravation of many skin disorders. An excellent though brief chapter on psychocutaneous medicine emphasizes this approach.

To sum up, we have here a thoroughly dependable, comprehensive guide to the modern practice of dermatology.

MORRIS H. SAFFRON, M.D.

PRACTICAL GYNECOLOGY. 2nd Ed. By Walter J. Reich, M.D., F.A.C.S., F.I.C.S., Professor of Gynecology, Cook County Graduate School of Medicine; and Mitchell J. Nechtow, M.D., F.A.C.S., R.I.C.S., Associate Professor of Gynecology and Obstetrics, Chicago Medical School. 648 pages, 284 illustrations, 68 subjects in color. J. B. Lippincott Company, Philadelphia and Montreal. 1957. Price \$12.50.

This book presents a wealth of data about general practice of gynecology with stress on the im-

portance of early diagnosis. Nine new chapters have been added since the first edition in 1950. The chapters on pediatric gynecology, pitfalls in diagnosis and the psychosomatics of gynecology will be of interest to any physician engaged in gynecological practice. Authors case histories are interesting and instructive. Any points in which this reviewer may differ with the authors as the value of progesterone in treatment of threatened abortion or empirical use of thyroid in functional bleeding are minor points indeed. These and the occasional repetitions do not detract from this well written, carefully edited book. The illustrations are beautiful and effective.

CAPT. MICHAEL MONIAS, MC, USA

SCOVILLE'S THE ART OF COMPOUNDING. 9th Ed. By Glenn L. Jenkins, Dean and Professor of Pharmaceutical Chemistry, Purdue University School of Pharmacy; Don E. Francke, Chief Pharmacist, University Hospital, University of Michigan; Edward A. Brecht, Dean and Professor of Pharmacy, University of North Carolina, School of Pharmacy; and Glen J. Sperandio, Associate Professor of Pharmacy, Purdue University School of Pharmacy. 551 pages. The Blakiston Division, McGraw-Hill Book Company, Inc., New York, Toronto, London. 1957. Price \$11.00.

The ninth edition of this standard reference and textbook represents a rather complete revision of the eighth edition, published in 1951. All of the prescription examples have been revised and brought in line with changing trends in therapy. The chapters on incompatibilities have been rearranged and extended to make them more easily used in teaching and for reference. Significantly expanded chapters include those on ointments and ointment-like substances, tablets, and parenteral solutions.

Most noteworthy of the new material in this edition is a 31-page chapter on ophthalmic solutions. Some of the important topics discussed in this chapter are pH, buffers, isotonicity, preservatives, and sterilization. A section on visual aids has also been added. This section lists motion pictures and filmstrips which are available from various sources and which can be used to supplement the book when it is employed as a text. Another addition is a table of metric and apothecary equivalents.

The authors have been successful in arranging the material in such a way that underlying principles are systematically presented and the practical applications of these principles are demonstrated. This book is recommended for inclusion in the reference libraries of both retail and hospital pharmacists.

LT. RICHARD L. SEDAM, MSC, USN

MODERN THERAPY IN NEUROLOGY. 22 contributors.

Edited by Francis M. Forster, M.D., Dean and Professor of Neurology, Georgetown University School of Medicine. 792 pages. The C. V. Mosby Co., St. Louis. 1957. Price \$12.00.

This timely and much needed book is a sign that clinical neurology has moved from a diagnostic position to a therapeutic position. In these days of treatment complexity, it is well, indeed, that a book of this sort is written to clarify, to firmly fix and to enlarge our knowledge in this comparatively new sphere.

The book is basically sound and completely practical. There are adjuvants of clinical insight, broad experiences and hard-won wisdom.

The treatment spectrum for specific disorders and emergencies is dealt with realistically and comprehensively. All in all, it speaks well of the master clinicians who wrote it.

This book is not only the kind one should have available for ready reference but is also the kind one should have available for slower perusal and considerable reflection. The clinical neurologist may find it indispensable.

LT. COL. ARTHUR J. LEVENS, MC, USA

LOCAL ANESTHESIA AND PAIN CONTROL IN DENTAL PRACTICE. By Leonard M. Monheim, B.S., M.S., D.D.S., Head of Dep't. of Anesthesia, University of Pittsburgh School of Dentistry. 299 pages, illustrated. The C. V. Mosby Co., St. Louis. 1957. Price \$8.75.

The author is well known for his devotion to the advancement of dental science, particularly in the field of local anesthesia. He exercises a forthright discriminating intelligence in this volume which reflects vast professional experience.

The first four chapters present fundamental neuroanatomy associated with the vital principles of pain, the trigeminal nerve, regional anesthesia, techniques of regional anesthesia, and analgesia. However, a rearrangement of subsequent chapters could be profitably considered. Chapter Eight, for example, appears to be most important and should be so emphasized under a clear title such as "Physical Diagnosis and Choice of Anesthetic." Material in general is well presented with minor exceptions such as the subject of *Edema*, under which the author expends but forty-three words. If the volume is intended as stated in the Foreword "for undergraduate students," there are areas which can be amplified. The student wants to know how and why.

In general the volume is unique in that it is written to benefit the patient and to raise the profession of dentistry to a higher level by rebutting the commonly held opinion that dentistry can be only a painful health service.

This book will be an asset to every undergraduate and practicing dentist.

CAPT. C. W. SCHANTZ, DC, USN

THE FAMILY IN PSYCHOTHERAPY. By C. F. Midelfort, M.D., Adolf Gundersen Medical Foundation, LaCrosse, Wis. 203 pages. The Blakiston Division, McGraw-Hill Book Company, Inc., New York, Toronto, London. 1957. Price \$6.50.

Dr. C. F. Midelfort has the very best training and he has brought all of it to bear on his subject in writing this book.

There are some who say the greatest achievement of mankind has been the development of the family as we know it today. Families are certainly the unit of civilization as we know it, not necessarily individuals anymore because "no man is an island" and almost everything anyone does affects someone else. Families form clans and clans form nations and so it goes.

Dr. Midelfort emphasizes the family in psychotherapy and thus points a new direction for modern thinking. Certainly in the case of mental illness the family nearly always has as much concern about the problem as the patient, and this point of view needs emphasis especially in treatment where the cooperation and interest of the family is essential.

Dr. Midelfort's book deals primarily with schizophrenia and depression, including, of course, paranoid illness, but his chapters on psychopathic personalities, character neuroses and psychotic neuroses are excellent.

The author has organized his material well and he presents it clearly. His discussion and summary are meaty and provocative. He includes enough case histories and direct quotations from patients to give the book a personal touch.

CMM

CLINICAL USE OF RADIOISOTOPES. By Wm. H. Beierwaltes, M.D., Associate Professor of Internal Medicine and Coordinator, Clinical Radioisotope Unit, University Hospital, Ann Arbor; Philip C. Johnson, M.D., Ass't. Professor of Internal Medicine, University of Oklahoma Medical School, Oklahoma City; and Arthur J. Solari, B.S., M.S. (Physics), Radiation Physicist for Clinical Radioisotope Unit and Kresge Research Isotope Unit, University Hospital, Ann Arbor. 456 pages, 126 figures. W. B. Saunders Co., Philadelphia and London. 1957. Price \$11.50.

This book is well prepared and covers the overall subject. Your reviewer feels that too much relative space is spent on the thyroid while the uses of Cr⁵¹, Co⁵⁷, and Fe⁵⁹ in hematological studies and fluid space studies has been slighted.

The fields of Nuclear Physics and perhaps radiobiology are subjects that cannot be adequately

covered in a text such as this which is devoted to the clinical use of radioisotopes. The expansion of the space devoted to the clinically used radioisotopes is recommended.

CAPT. E. R. KING, USN

THE PRINCIPLES AND METHODS OF PHYSICAL DIAGNOSIS. 2nd Ed. By Simon S. Leopold, M.D., Professor of Clinical Medicine, School of Medicine and Graduate School of Medicine, University of Pennsylvania. 537 pages, 379 illustrations, 25 color plates. W. B. Saunders Company, Philadelphia and London. 1957. Price \$9.00.

The value of a good history and complete physical examination needs to be emphasized again and again to modern students of medicine, who continue to rely almost completely upon laboratory, radiologic, histologic and other adjunctive methods for diagnosis and treatment.

Dr. Leopold has attempted this task in this new edition of physical diagnosis. All systems of the body are covered in a common sense manner with a correlation of physical signs with physiologic and pathologic changes in disease.

The author is an experienced instructor of medical students and has been trained in the school of Drs. Norris, Landis, Stengel and other keen clinicians of Philadelphia, and so is eminently fitted to write upon this subject.

The book is illustrated profusely and, as might be expected, the illustrations are often more instructive than the printed text. Some of the illustrations picture conditions in too advanced stages. The author has very considerably used footnotes to give credit to those observers mainly of yesterday who have described physical findings that have stood the test of time and are considered classic today.

Dr. Leopold's book will take a just place among other texts upon the subject of Physical Diagnosis. While the book is primarily written for medical students, general practitioners, residents, and those preparing for examinations of the American Boards, will profit much by a review of this book.

CAPT. JULIAN LOVE, USN, RET.

THE DRUG ADDICT AS A PATIENT. By Marie Nyswander, M.D., Senior Supervising Psychiatrist, Post-Graduate Center for Psychotherapy; Consultant, New York City Department of Health; President, National Advisory Council on Narcotics. 179 pages. Grune & Stratton, New York and London. Price \$4.50.

Dr. Nyswander has "geared this book to physicians in general practice" although "it is hoped that it will be useful to a wide variety of professional people who are thrown into contact with addicts—social workers, civic planners, hospital administrators and probation officers."

She has drawn conclusions from her broad experience with addicts at the U. S. Public Health Service Hospital in Lexington, Kentucky, and in her private and institutional practice and institutional practice in New York.

The New York Academy of Medicine report of 1955 and a "Commentary on the Management and Treatment of Drug Addicts in the United Kingdom" by Jeffrey Bishop, are included in the book. Considerable space is devoted to diagnosis and treatment. There is "An Addict's Glossary."

This book is a valuable contribution to the subject of drug addiction and to a problem that is ever with us.

COL. R. E. BITNER, USA, RET.

LYMPHATICS, LYMPH AND LYMPHOID TISSUE. By Joseph Mendel Yoffey, D.Sc., M.D., F.R.C.S., Professor of Anatomy, University of Bristol; and Frederick Colin Courtice, M.A., D.Sc., F.R.A.C.S., Director, Kanematsu Memorial Institute of Pathology, Sydney Hospital. 510 pages, 99 illustrations. Published for The Commonwealth Fund by the Harvard University Press, Cambridge. Price \$10.00.

This book is a detailed anatomical and physiological account of the lymphoid system. It details a great deal in experimental evidence throughout its chapters. There is detailed discussion of the physiology of lymph which includes its biochemical composition and its physiologic formation. There is detailed discussion of membrane permeability, and the relationships of the physiology of the water compartments in tissues (intracellular, extracellular, etc.). Various regions of the body are discussed with considerable repetition of the physiology of water compartments, electrolytes, fluid proteins, etc. that affect lymph and lymph flow.

The book in general, and particularly the latter clinical chapters, would be of great value to the physician dealing in disturbed electrolyte and vascular disorders. However, the primary usefulness of the book is for the research worker in medicine and biology.

RAY BROWN, M.D.

THE VISUAL FIELDS. A textbook and Atlas of Clinical Perimetry. By David O. Harrington, A.B., M.D., F.A.C.S., Clinical Professor of Ophthalmology, University of California School of Medicine. 327 pages; 234 illustrations; 9 color

plates. C. V. Mosby Company, St. Louis. Price \$16.00.

The author and his associates have devised a multiple pattern method of field examination and an ultra-violet light perimeter. He is well qualified to write a book on the subject.

The illustrations and plates in this book were shown at the meeting of the American Academy of Ophthalmology and Otolaryngology in 1956 and won first prize in the scientific exhibit. They have been beautifully reproduced by the publisher.

This book is of great value to ophthalmologists, neurologists, and neurosurgeons.

LESTER H. QUINN, M.D.

FRACTURES OF THE FACIAL BONES. By W. Wallace Webster, A.B., F.A.C.D., Associate Professor of Oral Surgery and Chairman of Department, College of Dentistry, University of Nebraska. 145 pages, 107 illustrations. University of Nebraska Press, Lincoln. 1957. Price \$6.50.

This book is primarily designed to acquaint the uninitiated, yet professional reader, with methods that could be used in a national disaster.

The first section deals with wounds and wounding, including descriptions of the basic physics of wounding; repair, both physiologic and mechanical; basic operative procedures; hospital procedures; and postoperative supportive treatment. Although too basic for the careful student, this section would serve as a guide for the casual student, or for the man under the stress of emergency.

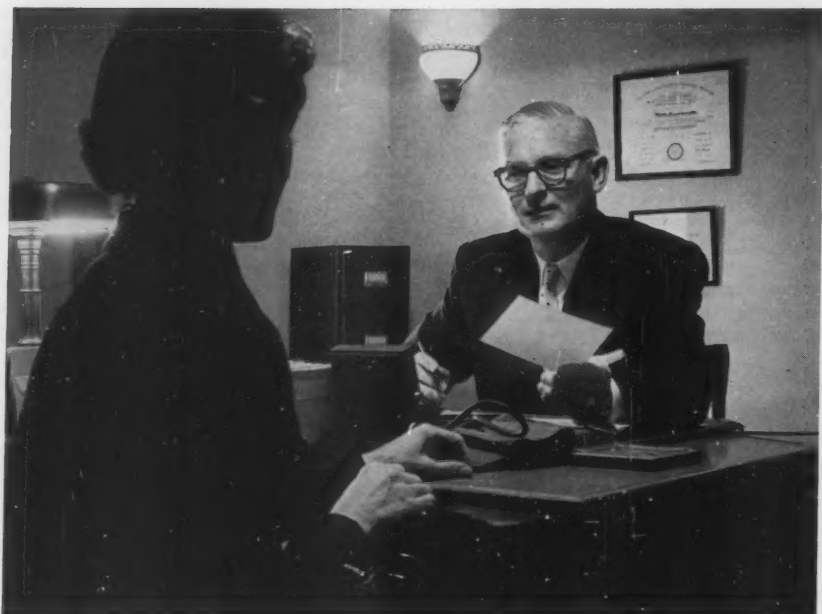
The management of common emergencies exclusive of shock (including such procedures as stabilization of fractures and transportation of wounded personnel) is discussed in the second section. Although its coverage of first aid is incomplete, this section presents valuable "NEED TO KNOW" information for the dentist in the field of combat disaster area.

Both emergency treatment, including that of shock, and definitive treatment are considered in the third section. The methods described are based on a variety of available facilities—ranging from those in the most fundamental field situation to those at well-equipped hospitals and dental clinics.

The book is generally well organized, brief, fundamental, and practical; and the author is evidently well acquainted with the subject at a working level.

CAPT. D. E. COOKSEY, DC, USN

"Now this prescription may give you a stuffy nose. If it does, just get a 'Benzedrex' Inhaler. It will keep you comfortable until I see you next week."



An innocuous, yet definitely unpleasant, side effect of many extremely useful preparations—some of them new, some relatively old—is nasal stuffiness.

When you prescribe one of these valuable preparations, you probably advise your patient that he should not be surprised if he gets a "stuffy" nose.

May we suggest you advise him, too, that if nasal stuffiness does occur, he

can obtain quick relief with a 'Benzedrex' Inhaler? That he need not suffer nasal discomfort between his visits to your office?

Propylhexedrine inhalant, S.K.F. ('Benzedrex' Inhaler) is a standardized product with the Army, Navy and Air Force. It is available as: F.S.N. 6505-261-7251.

Benzedrex* Inhaler

Packed with PROPYLHEXEDRINE, S.K.F., 250 mg.; and aromatics

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